

**“BECAUSE WE ARE ALONE...” ARGUMENTS FOR HUMANS AS THE  
UNIVERSE’S ONLY INTELLIGENT LIFE FORM FROM ANCIENT PHILOSOPHERS  
TO TODAY’S SCIENTISTS**

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Does alien life exist? This perennial question has driven some of humanity’s oldest scientific debates, going back to the ancient Greeks. My work investigates the way individuals have rhetorically deployed speculations about the impossibility of extraterrestrial life to advance other values and beliefs. Specifically, my research traces the unity-of-the-world cosmology or “unity,” for short, meaning the belief that humans are the only intelligent life form in the universe, in contrast to the “plurality-of worlds” one, or “plurality,” which holds open the possibility of multiple intelligent life forms. The unity rhetorical cosmology connects the absence of alien life with the idea of human value and transcendental, absolute ethics. Because “we” are alone, “we” are special, the thinking goes.

My dissertation traces the way cosmology serves as an argument in religious, political, and philosophical debates. Specifically, it examines the way that individuals have used claims of the absence of alien life to justify moral absolutism, teleology, and anthropocentrism, from Plato to the present day. The dissertation examines major historical figures as case studies including: Plato, Aquinas, William Whewell, and Alfred Russel Wallace. I draw on Kenneth Burke, Roland Barthes, and rhetoric-of-science-

literature (as well as many other sources) in order to unveil the hidden rhetorical meaning of a cosmology.

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## **PREFACE**

I have many individuals to thank for helping me bring this project to fruition.

I am thankful to have come in to the Communication Department at the University of Pittsburgh with such an amazing cohort: Tom Dunn, David Landes, Brita Anderson, Josh Beaty, Candi Carter Olson, John Jasso, and Heather Liebling. The nickname “demon cohort” seems to best encapsulate the experience. Along with my cohort, the graduate student community helped create an amazing atmosphere. During my time as a Pitt I attended a mock funeral, held a poetry reading outside the Cathedral, paraded around a cardboard cutout of Josh Beaty, and went sky diving. On occasion we grad student even got some work done and I would like to thank Brita Anderson, John Rief, and Michael Vicaro for editing parts of the dissertation for me.

I began my dissertation project at Wake Forest and I would like to thank Ananda Mitra, Allan Loudon, Mary Dalton, and Michael Hyde for beginning me on the project that ultimately took the form of this dissertation.

At the University of Pittsburgh I owe a debt to many scholars outside of my committee, who I would like to thank. John Poulakos helped brainstorm with me about my chapter on classical Greece. John Lyne offered sage advice on my use of rhetoric of science literature. Paul Scade (despite being out of the country and working at a different university) read several drafts of my chapter on Plato and offered a crucial philosophical

perspective. Finally, I owe a great debt of gratitude to Mary Zboray, who basically acted as an unofficial member of my committee, reading and commenting on countless drafts.

I was lucky to have an amazing committee, who shepered me rather painlessly through the process. Philip Smith took a chance on a whacky idea and agreed to be my outside reader (and also provided amazing copy edits). William Fusfield represented an enthusiastic voice in support of my work from the getgo. Babara Warnick graciously agreed to step in for my defense when William was unable to attend due to illness. Brent Malin offered excellent feed back throughout the process. Finally, Ronald Zboray played a crucial role in shaping my dissertation. I literally could not have written this document without him.

I am indepted to Tim O'Donnell, who changed the course of my life when he convinced me to go to grad school instead of law school and has done much to guide me through my academic career.

Finally, I would like to thank my parents, whose endless sacrafices on my behalf gave me the opprotunity to pursue my passions: my father who encouraged me to follow my dreams and my mom who pushed me to excel.

## 1.0 INTRODUCTION

During the height of the Cold War, when nations scanned the skies terrified of an impending nuclear catastrophe, scientists in the Soviet Union also searched the heavens for signs of extraterrestrial life. The Soviets believed that dialectical materialism acted as a universal principle and expected to discover on other planets advanced life forms fighting their own class struggles.<sup>1</sup> Over two thousand years earlier, the ancient Greek atomists postulated an infinite cosmos filled with every imaginable being.<sup>2</sup> In 1277, Etienne Tempier, the Bishop of Paris, began a debate about how the gospel applied to extraterrestrials and in the nineteenth and twentieth centuries, scientists like William Herschel and Percival Lowell pioneered telescope technology for the purpose of seeking alien life.<sup>3</sup> The last three centuries have birthed dozens of religions, from Mormonism to Scientology, based in whole or in part on the idea of inhabited alien planets. In the 1970s, Erich von Däniken sold millions of books worldwide making the argument that rather than speaking to God, Moses and other religious figures were speaking to alien visitors.<sup>4</sup> In 1997, a CNN/Time poll reported that fifty-four percent of Americans said they believe

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<sup>1</sup> George Basalla, *Civilized Life in the Universe: Scientists on Intelligent Extraterrestrials* (Oxford: Oxford University Press, 2006), 151; David Grinspoon, *Lonely Planets: The Natural Philosophy of Alien Life* (New York: Harper Collins, 2003); I.S. Shklovskii and Carl Sagan, *Intelligent Life in the Universe*, trans. Paula Fern (New York: Dell, 1966).

<sup>2</sup> Steven J. Dick, *Plurality of Worlds: The Origins of the Extraterrestrial Life Debate from Democritus to Kant* (Cambridge: Cambridge University Press, 1982).

<sup>3</sup> Ibid., 28; Grinspoon, *Lonely Planets*, 39-40.

<sup>4</sup> Michael J. Crowe, "A History of the Extraterrestrial Life Debate," *Zygon* 32, no. 2 (1997); Erich von Däniken, *Chariots of the Gods? Unsolved Mysteries of the Past* (New York: Bantam Books, 1971); Erich Robert Paul, *Science, religion, and Mormon cosmology* (Urbana: University of Illinois Press, 1992).

that life exists on other planets.<sup>5</sup> A 2005 poll by the Center for Survey and Research Analysis at the University of Connecticut found the number was sixty percent.<sup>6</sup> Belief in the existence of alien life is an important current in the development of western thought, but it is only half the story.

For every advocate for the existence of a cosmos full of planets inhabited by alien life there is one who vehemently opposes it.<sup>7</sup> Plato denied the possibility of extraterrestrial life in the *Timaeus* and said that the Earth's solitude in the universe indicated its connection to perfection.<sup>8</sup> Plato's cosmology eclipsed his political philosophy in importance in his later dialogues and fundamentally redefined Platonic thought.<sup>9</sup> Early Christian thinkers believed Plato's ideas to be in line with their biblical cosmology and incorporated *Timaeus* into religious doctrine, while ignoring the works of many of Plato's contemporaries who argued for many inhabited worlds. The result was that Christian theologians merged their own beliefs with a picture of the structure of the universe largely unchanged from Plato's cosmology and this became the standard interpretation of the universe throughout Europe during the Medieval period.<sup>10</sup> In the year 1600, Giordano Bruno, a mathematician, astronomer, and memory theorist who traveled across Europe and preached, among other "heresies," the existence of an infinite number

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<sup>5</sup> "Poll: U.S. hiding knowledge of aliens," *CNN*, <http://www.cnn.com/US/9706/15/ufo.poll/>.

<sup>6</sup> Tariq Malik, "Most Americans Believe Alien Life is Possible, Study Shows," *Space.com*, [http://www.space.com/news/050531\\_alienlife\\_survey.html](http://www.space.com/news/050531_alienlife_survey.html)

<sup>7</sup> The limitations section below will address what I consider to be "alien" life for the purposes of this dissertation.

<sup>8</sup> Plato's *Timaeus* responds to the cosmology of the atomists who believed that there existed an infinite number of universes. Plato argued that the universe we exist in is the only universe and that in the universe Earth is the only location habitable by anything other than mortal creatures. Plato, "Timaeus," in *Plato Complete Works*, ed. John M. Cooper (Indianapolis: Hackett, 1997), 31b.

<sup>9</sup> Gabriela Roxana Carone, *Plato's Cosmology and its Ethical Dimensions* (Cambridge: Cambridge University Press, 2005).

<sup>10</sup> Thomas F. Glick, Steven John Livesey, and Faith Wallis, *Medieval Science, Technology, and Medicine: An Encyclopedia* (New York: Routledge, 2005), 412.

of worlds, was put to death by the Papal inquisition.<sup>11</sup> The Renaissance begat a surge of belief in an inhabited cosmos. Fontenelle's book, *Conversations on the Plurality of Worlds* (1686), which advocated a multiplicity of extraterrestrial inhabitations, sold a massive number of copies and was eventually translated into ten languages.<sup>12</sup> A dozen or more books and dissertations followed the success of Fontenelle's book on the subject, from 1710-1750, which may not seem like much by today's standards, but historian Michael J. Crowe argues this, "dramatically demonstrates the popularity of pluralism" at the time.<sup>13</sup> Even at the height of the Age of Reason, Thomas Baker derisively referred to proponents of the Plurality-of-Worlds hypothesis as "World-Mongers."<sup>14</sup> Belief in the existence of alien life featured among Emmanuel Kant's and David Hume's many differences of opinion, with Kant in defense of the proposition and Hume in opposition.<sup>15</sup> Just when it seemed as though an academic consensus had formed around the Plurality-of-Worlds hypothesis, the mid-1800s brought a significant backlash from William Whewell, a renowned English scientist, philosopher, and Anglican theologian.<sup>16</sup> While many dialectic materialists later in the Soviet Union believed in aliens, their original

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<sup>11</sup> The prevailing historiography now suggests that Bruno was killed for a combination of political reasons and his belief in hermetic magic rather than his commitment to the Plurality-of-Worlds thesis. Edwards A. Gosselin and Lawrence S. Lerner, "Introduction," in *The Ash Wednesday Supper* (Toronto: University of Toronto Press, 1995). Nevertheless, Bruno's death was widely interpreted as a punishment for his advocacy of the Plurality-of-Worlds thesis and created a chilling effect on many intellectuals. Descartes was hesitant to write about the Plurality of Worlds because of Bruno's execution. Dick, *Plurality of Worlds*, 112.

<sup>12</sup> Bernard le Bovier Fontenelle, *A Discourse of the Plurality of Worlds written in French by the most Ingenious Author of the Dialogues of the Dead*, trans. W.D. Knight (Dublin: Andr. Crook and Sam Helsham and William Norman, 1687).

Michael J. Crowe, *The Extraterrestrial Life Debate, 1750-1900* (Mineola, N.Y.: Dover Publications, 1999), 18, 19.

<sup>13</sup> Crowe, *Extraterrestrial Life Debate*, 34.

<sup>14</sup> Thomas Baker, *Reflections Upon Learning* (London: A. Bosvile, 1699).

<sup>15</sup> David L Clark, "Kant's Aliens: The Anthropology and Its Others," *New Centennial Review* 1, no. 2 (2001): 241-48; Crowe, *Extraterrestrial Life Debate*, 96, 97.

<sup>16</sup> Menachem Fisch and Simon Schaffer, eds., *William Whewell: A Composite Portrait* (Oxford: Clarendon, 1991).

dialectician Hegel, who deeply influenced Karl Marx, insisted that life on other planets violated the “spirit” behind the dialectic, which he constructed in metaphysical terms connected specifically with humanity.<sup>17</sup> Although the emergent field of astrobiology (the study of alien life) now suggests that the scientific debate has been decided in favor of the existence of aliens, *Rare Earth* (2000), a book that argues against the existence of intelligent life on other planets, nonetheless became a popular and academic success.<sup>18</sup> While over half of the American population believes the universe contains alien life, between forty to forty-five percent believe we are alone.<sup>19</sup>

My dissertation does not seek to answer the empirical question of whether life exists outside the planet Earth. I am interested instead in the way individuals rhetorically deploy the question of alien life in order to advance other values and beliefs. There exist several bodies of work, for example, that study those who believe that life is ubiquitous in the universe and the ways these individuals enthymematically connect this belief with other beliefs that are not related by necessity, which I will explore later in this introduction. Underexplored in academic research are individuals and groups who have denied the possible existence of alien life. I am interested in how the belief that we are alone in the universe is deployed rhetorically and connected to other ethics, goals and politics. I look for linguistic styles, argumentative tactics, and deep-seated values, which

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<sup>17</sup> K. Rosenkranz, "Rosenkranz on Hegel's History of Philosophy," *Journal of Speculative Philosophy* 8, no. 1 (1874); E. T. Winkler, "Religion and Astronomy," *Baptist Quarterly* 5, no. 1 (1871).

<sup>18</sup> Scott Holter, "Dead Recokining," 2006 (2003), <http://www.washington.edu/alumni/columns/sept03/dead02.html> ; Peter Ward and Donald Brownlee, *Rare Earth: Why Complex Life is Uncommon in the Universe* (New York: Copernicus 2004).

<sup>19</sup> "Poll: U.S. hiding knowledge of aliens."

are repeated in texts that oppose pluralism written centuries apart. In these pages, I disclose a rhetorical environment that undergirds anti-pluralist beliefs.<sup>20</sup>

While cosmologies that stem from belief in an inhabited universe have been connected with a host of other beliefs from scientific rationalism to New Age Theosophy, belief in an uninhabited universe is consistently connected with one set of values and beliefs from Plato to its adherents today. Opponents of the plurality thesis often argue that humanity's solitary position in the universe is meaningful for how we as a species should live. This view takes many forms; some argue that because we are alone that ethics are objective and not relativistic as the sophists and others have claimed.<sup>21</sup> Others suggest that our solitude indicates that humanity exists for a special purpose whether it is explicitly religious or simply spreading consciousness throughout space.<sup>22</sup> Others still connect the harm of human extinction not to the fact that humanity as a species would be lost, but the belief that humanity as the only intelligent life in the universe would be lost.<sup>23</sup> All of these examples converge on the general connection between a cosmology where humanity is alone and the idea that the species is more special than if other life existed.

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<sup>20</sup> W. Charles Redding, "Communication Research and the 'Rhetorical Environment'," *Communication Studies* 50, no. 4 (1999): 337-51.

<sup>21</sup> Guillermo Gonzalez and Jay W. Richards, *The Privileged Planet: How Our Place in the Cosmos is Designed for Discovery* (Washington, DC: Regnery, 2004); Plato, "Timaeus."; William Whewell, "Of the Plurality of Worlds," in *Of the Plurality of Worlds. 1853 A Facsimile of the First Edition with an introduction by Michael Ruse*, ed. Michael Ruse (Chicago: University of Chicago Press, 2001).

<sup>22</sup> Ward and Brownlee, *Rare Earth*.

<sup>23</sup> Nick Bostrom, "Existential Risks: Analyzing Human Extinction Scenarios and Related Hazards," *Journal of Evolution and Technology* 9 (2002); Martin Rees, *Our Final Hour: A Scientist's Warning: How Terror, Error, and Environmental Disaster Threaten Humankind's Future In This Century — On Earth and Beyond* (New York Basic Books, 2003); Richard Posner, *Catastrophe: Risk and Response* (Oxford: Oxford University Press, 2005); John Leslie, *The End of the World: The Science and Ethics of Human Extinction* (New York: Routledge, 1996).

A proponent of this viewpoint, Whewell, coined the term “Unity of the World” in his bestselling book *The Plurality of Worlds* (1853) to describe his version of this cosmology, which took humanity’s solitary existence as a sign of our importance in the eyes of God.<sup>24</sup> I will use Whewell’s term unity of the world to reference connection, as seen in the several case studies from Plato’s time to the present, of the absolute lack of other intelligent life in the universe with the attribution of cosmic importance to humanity.<sup>25</sup>

My dissertation claims the unity cosmology’s deployment functions as argument. I make the case that rhetors use the unity cosmology as a justification for the specialness of humanity, which provides a foundation for their religious, philosophical, and political beliefs. I also argue that the argument for human specialness and its attendant ideological ramifications has succeeded in having a major impact on audiences. Finally, I contend that while adjustments have been made throughout history, the fundamental premises of the unity argument have remained stable for over 2,000 years.

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<sup>24</sup> “Plurality of Worlds” was the common name for the hypothesis that other planets were inhabited. In the dissertation I will occasionally shorten “unity of the world” to “unity,” just as the literature often shortens “plurality of worlds” to “plurality.” Whewell, “Of the Plurality of Worlds.”

<sup>25</sup> While most of the case studies I examine would define themselves in opposition to the pluralist position, differences do exist in what exactly they believe. On the one hand, Plato, for example, denies the possibility of any mortal material life outside of what we know as the planet Earth. Whewell, on the other hand, argues that intelligent life does not exist elsewhere, but that unintelligent life (animals) may exist (although this is unlikely). Despite the differences in the specifics of their cosmologies, all these authors use similar rhetoric to connect the absence of intelligent life in the universe to the importance of humanity.



## 1.1 LIMITATIONS

My study will focus exclusively on materialistic alien life throughout the cosmos, rather than spiritual or religious earthly manifestations. The distinction between material and spiritual can at times become blurry, for example, when many individuals claimed the planets served as the abode for angels, demons, or the souls of the dead. I believe a distinction can be made, however. Spiritual inhabitants of the cosmos were not considered “alien,” in the sense that religious individuals believed that they existed, could be understood through religious texts, interfered in human affairs, and occasionally revealed themselves. In contrast defenders of pluralism could only speculate about the nature of life forms on other planets and, for most of history, did not claim to have any interaction with them. Also the plurality hypothesis posited inhabitants like humans, even when those inhabitants were created by divine powers they are clearly delineated in the literature from angels and gods. Plato, for example, argued Earth (or rather what we recognize as Earth) was the only planet with human-like life, but suggested the wandering stars (what we now know as the planets, sun, and moon) were deities.<sup>26</sup> The distinction between spiritual and material life maintains the necessary components for the unity ideology, because material aliens call into question humanity’s uniqueness, whereas spiritual inhabitants do not.

Similarly, my study will not examine reactions to various human groups or animals alive on Earth as alien, except in so far as these reactions may shed light on attitudes about extraterrestrials. The “discovery” of the Americas, for example,

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<sup>26</sup> Plato, "Timaeus," 38c-39e.

represents a period in history that for many individuals at the time (European and indigenous) can be equated to an encounter with extraterrestrial life. At first, serious debate occurred in Europe over whether the inhabitants of America were even human.<sup>27</sup> Some of the literature of the time even reflects this debate, like Shakespeare's *Tempest* with its quasi-human characters.<sup>28</sup> Insofar as the European and indigenous peoples viewed each other as alien, this encounter serves as a useful case study for what is at stake in the debate over pluralism.<sup>29</sup> My dissertation will not examine the treatment of human groups as alien as a case study, however.

The literature on the question of pluralism clearly delineates itself from debate over the nature of various human groups. Defenders of the unity cosmology from Plato onward view the confines of the planet as a meaningful boundary to demarcate the discussion of alien intelligent life. The possibility of humanoid intelligence on Earth may undermine the narrative of cultural importance (for example European cultural importance), but is not nearly as problematic to the myth of anthropocentrism as the potential for a universe full of intelligent life. The planet provides a natural boundary, which serves to make Earth a complete unit and thus a model for perfection, an idea consistently found in the unity writings. Also important is that the view of other humans as separate species has always been much more ephemeral than the unity cosmology. Even Kupper claims that the belief that the indigenous people in the Americas were not human quickly faded from popular European sentiment, because, among other things, the

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<sup>27</sup> Lawrence Lessig, *Code 2.0* (New York: Basic Books, 2006), 1-9; Lewis Hanke, *All Mankind is One: A Study of the Disputation Between Bartholomé de Las Casas and Juan Ginés de Sepúlveda in 1550 on the Intellectual and Religious Capacity of the American Indians* (DeKalb: Northern Illinois University Press, 1974), 3-17.

<sup>28</sup> Lev Manovich, *The Language of New Media* (Boston: MIT Press, 2001), 892-912.

<sup>29</sup> Joachim Küpper, "The Traditional Cosmos and the New World," *Modern Language Notes* 118, no. 2 (2003): 363-92.

Christian understanding of *Genesis* allowed most Europeans to assimilate the idea of variations of species as representative of the same species (something not applicable to alien life).<sup>30</sup> More importantly, those who do view subsets of humanity as nonhuman often argue that the existence of these quasi or subhumans make them more, not less, special, which is in direct contrast to the unity cosmology. The works of both Mark Harrison and Christopher Roth trace the birth of the modern UFO movement and suggest that groups that believe in racial distinctions between humans are more likely to be pluralists.<sup>31</sup> This is not to say that pluralism is strongly correlated to racist beliefs, but only that pluralists are more likely to believe in racial distinctions than believers in unity. Defenders of the unity cosmology typically argue that all of humanity is a singular species. In the *Timaeus*, Plato creates a clear category distinction between humans and animals which groups all humans together based on their proportions.<sup>32</sup> The idea that all humans belong to the same species runs throughout Plato's dialogues.<sup>33</sup> Whewell, while he still maintains many of the culturally biased beliefs of his time, repeatedly and clearly states that all humans are fundamentally the same.<sup>34</sup> While the examination of groups that view other humans as alien is no doubt important, the unity of the world cosmology is distinct enough to warrant an independent examination.

A final limitation regards the emphasis here on one side of two-sided debate of unity versus plurality. With so much solid work on plurality already in print, as can be

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<sup>30</sup> The suggestion that the belief in sharp racial distinctions proved ephemeral does not suggest that it was unimportant or did not emerge with disastrous consequences at various points throughout history.

<sup>31</sup> Christopher F. Roth, "Ufology as Anthropology: Race Extraterrestrials, and the Occult," in *E.T. Culture: Anthropology in Outerspaces*, ed. Debora Battaglia (Durham, N.C.: Duke University Press, 2005); Mark Harrison, "The Extraterrestrial in US Culture" (PhD diss., University of Pittsburgh, 2006).

<sup>32</sup> Plato, "Timaeus," 90e-92c.

<sup>33</sup> H. C. Baldry, *Unity of Mankind in Greek Thought* (London: Cambridge University Press, 1965), 76.

<sup>34</sup> Torben Grodal, "Stories for Eye, Ear, and Muscles: Video Games, Media and Embodied Experiences," in *The Video Game Theory Reader*, ed. Mark Wolf and Bernard Perron (New York: Routledge, 2003), 43, 94.

seen throughout the dissertation, the aim here is to recover the oppositional rhetoric to what has become today the pluralist orthodoxy. The plurality-unity debate is naturally recapitulated in the process in delving into the rhetoric of key thinkers arguing for the unity of worlds, but a blow-by-blow account of the debate falls outside the scope of study.

## 1.2 METHODOLOGY AND CHAPTER OUTLINE

I plan to trace the Unity-of-World cosmology throughout western history from Plato to the modern day. In order to make this project manageable in scope, I focus on key periods of argumentative conflict between the unity and plurality cosmologies. I use Debra Hawhee and Christa Olson's method of Pan-historiography, which involves taking case studies throughout time to illuminate the history of an argument.<sup>35</sup> In each period I have used authoritative histories of the debate to find the most influential texts defending unity.<sup>36</sup> I provide uniquely close rhetorical criticism of the portions of these texts relevant to cosmology in order to search for an underlying ideology common to the belief in unity.<sup>37</sup>

I will explain how these texts are situated within their own particular historical context, but also highlight elements of the cosmology that stay constant over time. In

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<sup>35</sup> Debra Hawhee and Christa Olson, "Pan-Historiography: The Challenges of Writing History across Time and Space," in *Theorizing Historiography in Rhetoric*, ed. Michelle Ballif (Carbondale: Southern Illinois University Press), forthcoming in press. Dr. Hawhee presented at the University of Pittsburgh and mentioned this article would be coming out. She was kind enough to send me an advance copy.

<sup>36</sup> Crowe, *Extraterrestrial Life Debate*; Dick, *Plurality of Worlds*; Steven J. Dick, *The Biological Universe: The Twentieth-century Extraterrestrial Life Debate and the Limits of Science*, 1st pbk. ed. (Cambridge: Cambridge University Press, 1999).

<sup>37</sup> Hawhee and Olson, "Pan-Historiography: The Challenges of Writing History across Time and Space."

order to understand the reception and dissemination of the cosmology within the historical eras I examine, I trace the contemporary responses to the featured work. In the first chapter I do this by using the histories on the debate over extraterrestrial life to point me in the direction of texts to examine, such as Steven Dick's *Plurality of Worlds* (1982) and Michael J. Crowe's "A History of the Extraterrestrial Life Debate" (1997).<sup>38</sup> Unlike the other chapters, which provide in-depth case studies of major works that defend unity, the second chapter covers a transitional period from the dominance of the unity to its serious challenge by the plurality cosmology. I will examine several works from the period that responded to the plurality cosmology and trace the general tenor of the debate through secondary sources like the works of Dick and Crowe.

Some of my research involved systematic searching in online digital archives. In the third chapter, I trace the response to Whewell's *Plurality of World's* through the *American Periodicals Series* database, a major (and robust) digital humanities resource. A search reveals over 400 articles that contain the term "plurality of worlds" in the *American Periodicals Series* alone. That database is the most comprehensive collection of magazines stretching published in what is now the U.S. from 1740-1900 and encompassing over 1,000 journals. For the fourth chapter, I use *LexisNexis Academic* news database, JSTOR, and the search engine Google to trace the reception of the book *The Anthropic Cosmological Principle* in a similar fashion.

The combination of close rhetorical reading and archival work illuminate the rhetorical use of the unity cosmology throughout history. Major philosophical and religious thinkers have invested the idea of human uniqueness with ideological value.

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<sup>38</sup> Dick, *Plurality of Worlds*.

The scientific question of life on other planets thus becomes entangled in philosophical, religious, and political debates. The close readings and examination of reception detail the rhetorical power of the unity cosmology.

The first chapter, “Plato’s Invented Universe: Unity of the World in the Ancient World,” grounds my examination of the unity cosmology. The unity cosmology does not necessarily begin with Plato, but he provides the best starting point for an examination of this cultural myth. His cosmology, presented primarily in the *Timaeus* (fourth century BCE), has two important features that appear to be absent in previous eras. Earlier western cosmologies that claimed no other intelligent life existed in the universe did not encounter serious opposition from pluralists. While myths have the most power when society takes them for granted, they also become very difficult for scholars to study. When myths have become entrenched in a culture they do not need to be specifically referenced in order to be effective. Plato wrote his cosmology in the face of the atomists’ rival materialist cosmology, which postulated an infinite number of inhabitable worlds. The conflict between the Plato and the atomists provides an opportunity to examine what the aspects of the unity cosmology Plato highlights (including its rhetorical components) in opposition to a pluralist cosmology.

The second factor in favor of beginning with Plato is that he more than any of the other cosmologists at the time explicitly connects his physical description of the universe to ethical and political positions. In fact, evidence exists that suggests Plato’s deployment of the unity cosmology was almost entirely motivated by his desire to spread his philosophy. The connections Plato draws between the structure of the universe and

his other philosophical ideals become the nucleus of the unity mythology throughout later eras.

Plato connects the structure of the universe to his philosophy by arguing that the cosmos contains messages for how humans should live. Unsurprisingly, Plato suggests that these messages justify the political philosophy that he had been an advocate of since his earliest dialogues. Plato describes a cosmos where Earth is literally the center of the universe. Positioning the Earth as the center of the universe was a common theme among early cosmologies. Plato, however, not only locates the Earth physically at the center, but his cosmology obliterates the potential for any form of alien otherness. In Plato's cosmology the universe exists solely for the benefit of humanity; outer space becomes a fixed entity operating in fixed regularity, endlessly transmitting a message of how to live to the human species. This cosmology makes no space for alien lives, literally, because the crystalline universe cannot be inhabited and rhetorically, because the sophists, atomists, pre-Socratics and others that disagreed with Plato were acting out of sync with the universe.

Plato's cosmology became one of the dominant strains of thinking on the universe in ancient Greece, but it had competitors. The atomists' philosophy still survived, as did Aristotle's more scientific version of Plato's ideas. When Christianity became the dominant religion of Europe, however, it was Plato's cosmology that resonated most with the prevailing theology. My second chapter, "The Dominance of the Unity Cosmology: Unity from Plato to Galileo," traces the transition of unity beliefs from the ancient to the medieval world. Individuals like Thomas Aquinas, who wrote on unity in *de Potentia* (1265-1266) and the *Summa Theologica* (1265-1274), harmonized Plato's cosmology, the

scientific ideas of Aristotle, and Christian theology.<sup>39</sup> This new version of the unity cosmology became the dominant, largely unquestioned cosmology of Europe well through the 1600s. The unity cosmology provided a foundation for medieval theology and ethics throughout Europe.

The Copernican Revolution provided an important catalyst to the rise of modernity. Up until this time, most of the debate about life on other planets focused on whether it was theoretically possible for such a universe to exist, rather than whether plurality in fact existed. These debates typically occurred within a religious context with one side making Plato and Aristotle's arguments for why there could not be a plurality of worlds and the other side saying these explanations incorrectly placed limits on an omnipotent creator. The success of the Copernican cosmology opened up space for a different kind of discussion, which focused not on whether a plurality of worlds was possible, but whether it in fact existed. Bolstered by the adoption of the Copernican cosmology among elite thinkers, the plurality theory became the dominant paradigm in scientific and academic discourse.

Despite the success of the Plurality-of-Worlds cosmology, vocal detractors, fearful of the ethical and theological implications of plurality, published works that defended the unity cosmology.<sup>40</sup> This minority of scholars fought a losing battle against the modern pluralist cosmology. While Kepler's telescopic observations caused him to proclaim, "Is man the most noble rational creature? Are things made for him?," Caspar

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<sup>39</sup> Thomas Aquinas, *Quaestiones Disputatae De Potentia Dei*, trans. English Dominican Fathers (The Newman Press, 1952); Thomas Aquinas, *The Summa Theologica of St. Thomas Aquinas. Part I QQ. L.-LXXIV*, trans. Fathers of the English Dominican Province, 2nd Revised ed., 10 vols., vol. 1 (London: Burns Oates and Washbourne, 1920).

<sup>40</sup> Robert Jenkin, *The Reasonableness and Certainty of the Christian Religion*, 3rd ed., vol. 1 (London: Richard Sare, 1708); Baker, *Reflections Upon Learning*.



Bartholin and Athanasius Kircher responded definitively in the affirmative.<sup>41</sup> This chapter examines the rise and fall of unity's hegemony in order to provide a bridge between the ancient and modern instantiations of the unity cosmology.

Upon its publication in 1853, Whewell's *Plurality of Worlds* ignited fierce debate by its suggestion that the plurality thesis had little basis in science or religion.<sup>42</sup> The massive controversy that resulted played itself out in academic rejoinders and a prolonged back in forth in popular magazines. This controversy suggests the victory of the plurality cosmology in the 1600s was much more ephemeral than real. My third chapter, "William Whewell and Alfred Russel Wallace: Unity Cosmology in the Modern Era," examines the unity cosmology of two of the nineteenth century's greatest thinkers.

Whewell offers an impressive array of cutting-edge scientific arguments to back his position, but the implications have changed little from Plato's cosmology. Whewell and his supporters argue that the unity theory is crucial to the premise that humanity has a special role in the cosmos. In contrast, the plurality cosmology, "repeatedly annihilate[s]" humanity "by the growing magnitude of the known Universe."<sup>43</sup> Whewell used the unity cosmology as an argument against the relativism he saw in the philosophies of utilitarians and others.

Alfred Russel Wallace, inspired by Whewell's work, wrote his own defense of the unity cosmology. In *Man's Place in the Universe* (1903) and *The World of Life* (1910)

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<sup>41</sup> Grant McColley, "The Seventeenth-Century Doctrine of a Plurality of Worlds," *Annals of Science* 1, no. 4 (1936): 426.

<sup>42</sup> William Whewell, *Of the Plurality of Worlds*. 1855. *A Facsimile of the First Edition with an introduction by Michael Ruse*, 1st ed., 1st ed. (1855; repr., Chicago: University of Chicago Press, 1855; reprint, 2001).

<sup>43</sup> Whewell, "Of the Plurality of Worlds," 63.

Wallace connects the absence of alien life to a special purpose for humanity.<sup>44</sup> He used unity as an argument against capitalism and social Darwinism, claiming that humanity represented the telos of the universe and thus could escape the survival of the fittest paradigm.

In the early 1900s another wave of belief in extraterrestrial life overtook both the academic and popular imagination. Percival Lowell popularized the idea that Mars was home to an advanced alien civilization, which became a view held by many other prominent scientists. Science fiction and popular science magazines popularized the plurality viewpoint even as Lowell's belief in advanced life on Mars began to fade from mainstream scientific thought. When governments sent probes to nearby planets in the 1970s, the hopes of scientists and the public ran high that at least microbial life would be found. Each new mission of discovery brought more disappointing news for those that were invested in the idea that life was ubiquitous in the universe.

As the chance of finding life in the solar system declined, the time was ripe for another emergence of the unity cosmology. My fourth chapter, "Tipler and Barrow: The Unity Cosmology in the Present Day," traces the recent reemergence of unity in the work *The Anthropic Cosmological Principle*.<sup>45</sup> In the 1980s Frank Tipler and John Barrow created an updated version of Plato's unity cosmology that combined the absence of alien life with cutting edge principles from quantum physics to present an anthropocentric picture of the universe. They argue that this anthropocentric universe provides a material

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<sup>44</sup> Alfred Russel Wallace, *The World of Life: A Manifestation of Creative Power, Directive Mind and Ultimate Purpose* (New York: Moffat, Yard and Company, 1911); Alfred Russel Wallace, "Man's Place in the Universe," *Fortnightly Review* 74, no. 435-411 (1903).

<sup>45</sup> John D. Barrow and Frank J. Tipler, *The Anthropic Cosmological Principle* (New York: Oxford University Press, 1986).

foundation to the belief that humans are special and that morality has a foundation in the structure of the cosmos.

### 1.3 LITERATURE REVIEW

Two major bases of literature need exploration before proceeding to my case studies. The first, involves academic pieces that examine the rhetorical implications of plurality and unity cosmologies. These works will provide a glimpse into the current thinking on the subject and the literature examining plurality will provide a foil with which to understand the role the unity argument plays rhetorically. The second set of important sources provides the critical foundation to understand how the unity argument gains its rhetorical power. This section outlines both of these literature bases in order to provide a picture of the current writing on rhetoric and alien life and to map the tools I will use for my own critical intervention into that literature.

No major study of the Unity-of-the-World (under that or any other name) cosmology as an argument currently exists. In fact, very little has been written about those who reject the possibility of alien life as a group.<sup>46</sup> Michael J. Crowe and Steven Dick trace the history of the debate over the question of alien life, but their works, while incredibly thorough, are intellectual histories of cosmological thinking and do not

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<sup>46</sup> Plato's cosmology has attracted serious scholarly attention, but these works do not connect his cosmologies to others that reject the possibility of alien life. A. E. Taylor, *A Commentary on Plato's Timaeus* (New York: Garland, 1967); Donald J. Zeyl, *Timaeus* (Indianapolis: Hackett, 2000); Gregory Vlastos, *Plato's Universe* (Seattle: University of Washington Press, 1975); Carone, *Plato's Cosmology*; Francis MacDonald Cornford, *Plato's Cosmology: The Timaeus of Plato* (Indianapolis: Hackett, 1997).

examine the ways these cosmologies act as rhetorical devices.<sup>47</sup> Only a few articles and brief references in larger works discuss the way the unity cosmology helps shape other discourses.

Michael Zimmerman touches on the issue briefly in an article about UFO abductions. He argues that cosmologies that exclude the possibility of alien life are part of a long history of cultural myths that allow people to feel more important by narrowly drawing the boundaries of which beings are valued or, in this case, exist.<sup>48</sup> Zimmerman uses the analogy of the European exploration of the Americas to show how dehumanization and denial of existence serve the same mythic function.

He describes how the Europeans “discovered” two continents of people blissfully ignorant of Europe, much less ideas Europeans took for granted like Christianity and capitalism. Zimmerman believes the finding that Europe did not exist as central conduit for all human activity on the planet provided an existential shock to its inhabitants. He argues that in order to minimize the significance of the discovery the Europeans first dehumanized the inhabitants of “the new world,” then embarked on a plan to eliminate them. The first contact between Europeans and the indigenous peoples of America shows how dehumanization and denial serve the similar rhetorical function of building up a sense of importance.<sup>49</sup> Zimmerman suggests that the same cultural mythology that

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<sup>47</sup> Dick, *Plurality of Worlds*; *ibid.*; Dick, *The Biological Universe*; Crowe, *Extraterrestrial Life Debate*.

<sup>48</sup> Michael E. Zimmerman, "Encountering Alien Otherness," in *The Concept of the Foreign*, ed. Rebecca Saunders (Lanham, MD: Lexington Books, 2002).

<sup>49</sup> Although Joachim Küpper never makes the connection to life on other planets, he reaches similar conclusions to Zimmerman. Küpper suggests that the Europeans were especially vulnerable to the shock of discovery because a Küpper, "The Traditional Cosmos and the New World." "creationist, monotheistic view of the world—is liable to be shaken fundamentally by the emergence of ‘new’ worlds.”<sup>49</sup> Again the idea of stability and permanence are juxtaposed with alien life, even when the aliens in question are human. The powerful reactions of many individuals to humans perceived as alien indicate that nonhuman alien intelligence would probably be even more difficult for to confront. *Ibid.*, 368-75, 89.

recoiled at the possibility of a civilization of people on the other side of the world could be at work when individuals deny the possibility of alien life.<sup>50</sup>

Renowned political theorist Alexander Wendt and political scientist Raymond Duvall make a similar argument in another academic piece about UFOs. Wendt and Duvall argue that the state refuses to investigate UFOs, because the possibility of intelligent life undermines the state's power.<sup>51</sup> Intelligent alien life, they argue, calls into question the metaphysics of anthropocentrism that the state relies on in order to maintain order. The state depends on biopolitical control, categorizing who is and is not a being of value. Wendt and Duvall argue that a serious investigation of UFOs may confirm that nonhuman life can be intelligent and thus is beyond the ability of the state to assign or revoke value. When the state is unable to use biopolitical control in order to subdue opposition it simply destroys the opposition with force. Here again the UFO exists outside the state's power, because the ability to travel to Earth implies enough scientific prowess to avoid or retaliate against aggression. Wendt and Duvall argue that in order to preserve its power the state simply chooses to ignore any possibility of UFOs.<sup>52</sup>

Zimmerman and Wendt and Duvall focus narrowly on UFOs, but their analysis could be applied to the discovery of intelligent life anywhere in the universe. The myth of constant progression towards a more perfect society rests heavily on the myth that Earth is alone in the cosmos. The possibility of alien planets that exist in different, much less unimaginable, ways calls into question the foundations of all human institutions. The existence of other worlds suggests a lack in our own world, whereas a cosmology that

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<sup>50</sup> Zimmerman, "Encountering Alien Otherness," 157-60.

<sup>51</sup> Alexander Wendt and Raymond Duvall, "Sovereignty and the UFO," *Political Theory* 36 (2008).

<sup>52</sup> *Ibid.*, 625-29.

treats Earth as solitary allows individuals to see the present as inevitable and thus read history in a teleological fashion. I use these works as a starting point and expand the analysis from rejection of UFOs to the unity cosmology as a whole.

Michael Hyde comments briefly on cosmologies that focus only on humanity, “Our presence in the Universe, I think it is fair to say, is rather insignificant. How dare we be as selfish self-centered—as rotten with perfection—as we sometimes are?”<sup>53</sup> Hyde’s use of the phrase “rotten with perfection,” references Kenneth Burke’s belief that humanity inevitably seeks to achieve perfection even at great expense.<sup>54</sup> This innate drive for perfection helps to explain the European panic at the discovery of “the new world” and the refusal of states to seriously search for UFOs. The possibility of radical otherness calls into question one’s own claims to perfection or perfectibility. My dissertation argues that the question of perfection (not objective presence or absence of alien life) lies at the center of the unity cosmology.

In contrast to the dearth of scholarship on the unity cosmology there have been numerous examinations of various incarnations of the plurality cosmology. These works provide important insights into my own study. Because the myths associated with unity cosmology and the plurality cosmology are often in direct opposition, it becomes important to have an understanding of the literature on the plurality of worlds. My reading of the plurality literature suggests, on the one hand, a much more fluid approach to the myths and meanings attached to the presence of alien intelligence; the unity cosmology, on the other hand, has a more fixed ideological component. Reading the

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<sup>53</sup> Michael J. Hyde, *The Life-Giving Gift of Acknowledgment*, ed. Ramsey Eric Ramsey (West Lafayette, Ind.: Purdue University, 2006), 286.

<sup>54</sup> Michael J. Hyde, *Perfection: Coming to Terms with Being Human* (Waco, Tx.: Baylor University, 2010).

plurality literature in connection with the unity literature shows points of stasis as well as common ground between the two cosmologies.

George Basalla offers a comprehensive study of the plurality cosmology from Copernicus to the present.<sup>55</sup> He examines scientists writing in defense of plurality and argues that these figures connect a plurality to their belief in progress and scientific rationality. He argues these scientists craft a narrative of intelligent life being plentiful in the universe. They then hypothesize that some of this life will be much more technologically and socially advanced than humanity. Soon imaginations run wild; the scientists offer potential scenarios for advanced alien species that seem more like science fiction than science fact. Ordinarily clear-headed scientists like Carl Sagan make outlandish claims about how contact with advanced life forms will solve all of Earth problems, because humanity would be able to learn from a more evolved race. Basalla makes the case that these secular scientists replace God in traditional religious myth with advanced alien life.<sup>56</sup>

Of all the research I have examined, Basalla's study of the plurality cosmology is the academic work that most clearly mirrors my own. He traces the historical development of the plurality cosmology in modern times, but focuses on how individuals tie the cosmology to social issues outside the realm of astronomy. Like Plato before them, the scientists Basalla studies use the construction of the universe to justify a contingently related worldview. My own study will be similar to Basalla's, but instead focused on the unity cosmology.

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<sup>55</sup> Basalla, *Civilized Life in the Universe*.

<sup>56</sup> *Ibid.*, 158-60.

Mark Harrison's study of the modern UFO movement is the only explicitly rhetorical examination of the belief in alien life.<sup>57</sup> He traces the development of the modern UFO movement from the ashes of Theosophy.<sup>58</sup> Theosophy developed in the 1870s as a reaction to the conflict between Darwinism and Christian Creation Science. Theosophy mixed racial science, folktales, and superficial knowledge of eastern traditions into one of the more bizarre movements in history. The group became a haven for Nazis and other racists who refused to accept that all humans were created from the same mechanism (whether God or evolution). Harrison argues that Theosophy initially deified magical Ascended Masters (enlightened individuals), but these figures get replaced in cultural lore with alien visitors as the UFO craze comes into fruition. The UFO movement in the West still contains many of the problematic racist beliefs that it inherited from its Theosophical origins.

The Theosophists projected their racism onto the structure of the universe and came up with a complicated hierarchy of visiting alien races correspondent to the "races" of humans on Earth. The racial hierarchy of aliens served as a justification for the Theosophists' earthly racism. This example appears to blur the line between cosmology and religion, since it goes without saying that Theosophist teachings lack any sort of objective verification. It is true that cosmologies can be founded on faith, but they can also claim a basis in material reality. Both Christopher Roth and Harrison argue that the Theosophists existed at the fringes of science, rather than rejecting science wholeheartedly. While the Theosophists' beliefs may seem bizarre and counterfactual they hid

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<sup>57</sup> Harrison, "The Extraterrestrial in US Culture".

<sup>58</sup> Roth provides a very similar study from an anthropological perspective. Roth, "Ufology as Anthropology."



them behind a layer of (pseudo)science. The works of Roth and Harrison have important insights for my dissertation, because like the Theosophists the unity and plurality camps use cosmology as a scientific mask to justify their political and ethical values.

All of these examinations of the question of alien life provide insightful analysis that informs my dissertation. The fact remains, however, that not much has been written about the rhetorical implications of alien life, much less the lack of alien life. In order to make sense of my case studies it becomes necessary to draw from more rhetorical theories and apply them to the specific case of alien life. These rhetorical theories provide a lens to understand the why the unity cosmology has gained such traction throughout the years and also provide the starting point to demystify unity with the from the ideologies attached to it.

Although not writing explicitly about alien life, Stephen Edelston Toulmin's book *Cosmopolis* (1990) provides a lucid account of the way in which individuals can harness the rhetorical force of cosmology.<sup>59</sup> He argues that rationalists used the Copernican revolution as an opening to rewrite the academic disciplines from the ground up. An alliance of scientists, philosophers and political thinkers interpreted the finding that the earth and its inhabitants did not occupy a privileged position in the solar system, as a justification for an empirical methodology.<sup>60</sup> Toulmin suggests that this shift was an important catalyst to the spread of modernity throughout Europe, which resulted in drastic changes in the study of natural philosophy, religion and politics. While Copernicus's discovery represents the archetype of scientific revolution, Toulmin

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<sup>59</sup> Stephen Edelston Toulmin, *Cosmopolis: The Hidden Agenda of Modernity* (Chicago: University of Chicago Press, 1990).

<sup>60</sup> *Ibid.*, 82-84.

articulates how this shift is fundamentally a rhetorical one even as it occurs within the framework of the scientific (a point I will return to later in the chapter).<sup>61</sup>

Cosmology exists at the intersection of science and cultural mythology. It is relatively uncontroversial to suggest that myths shaped the political, religious, scientific, and cultural existence of early humankind. Scholars point out that myths continue to play an important role in daily affairs, and though the specific content of the myths may have changed over time, the form of mythic language remains relatively unchanged. Barthes argues that myth exists as a type of speech rather than as a particular idea or thing. The power of mythic language is that it hides the ideological nature of particular terms and thus fills the inevitable ambiguities that arise from language.<sup>62</sup> Another way that myth exerts rhetorical force is Barthes's belief that myths act as propositions that need no support.<sup>63</sup> Myth is simply taken for granted whether it's the prevailing belief that everything can be put into monetary values or the medieval European practice of justifying monarchy on the basis of religion.<sup>64</sup>

The way that myth invokes unstated premises makes it very similar to Aristotle's enthymeme and in fact those that deploy the unity cosmology almost exclusively do so in enthymeme form.<sup>65</sup> They almost never explicitly make the connection between

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<sup>61</sup> Thomas Kuhn, *The Structure of Scientific Revolutions*, 3rd ed. (Chicago: University of Chicago Press, 1996); *ibid.*

<sup>62</sup> Roland Barthes, *Mythologies* (London: Paladin, 1973), 109, 32.

<sup>63</sup> *Ibid.*, 143.

<sup>64</sup> Kenneth Burke, *A Grammar of Motives* (Berkeley: University of California Press, 1962), 116-17.

<sup>65</sup> The enthymeme has many definitions; here I simply use it to refer to an argument with an unstated premise and rhetorical (probabilistic) premises. Lloyd F. Bitzer, "Aristotle's enthymeme revisited," *Quarterly Journal of Speech* 45, no. 4 (1959); Thomas M. Conley, "The Enthymeme in Perspective," *Quarterly Journal of Speech* 70 (1984); Antoine C. Braet, "The Enthymeme in Aristotle's Rhetoric: From Argumentation Theory to Logic," *Informal Logic* 19, no. 2 & 3 (1999); M. F. Burnyeat, "Enthymeme: Aristotle on the Rationality of Rhetoric," in *Essays on Aristotle's Rhetoric*, ed. Amélie Oksenberg Rorty (Berkeley: University of California Press, 1996).

humanity's solitary existence and the tenants of the unity mythology. This leaves audience members to make the connection for themselves, drawing on their own preexisting (perhaps unrecognized) feelings. Aristotle argues that enthymemes act as the most effective form of syllogism, precisely because it calls on the audience to participate.<sup>66</sup> In contrast to the analytic style of eristic logic, enthymemes draw on commonplaces in order to rhetorically connect with the audience.<sup>67</sup> In the case of the unity cosmology the unstated premise could be that rare things are valuable or that the existence of other ways of being would make our own appear relative rather than teleological. Either way, the enthymematic deployment of the unity cosmology both strengthens its appeal and reveals something about the audiences to which it appeals, often the degree to which they subscribe to belief in absolute morality, teleology, and anthropocentrism.

Cosmology provides a strong foundation for myth and enthymemes precisely because it does not seem ideological. The question of whether or not life exists on other planets is an empirical one, grounded in objective reality, although not verifiable in the past or, for the most part, in the present. It is not the material condition of the universe that constitutes myth, however, but the attempt to put that into language as Burke describes

a reduction of the world to the dimension of words... any terminology of motives  
reduces the vast complexity of life by reduction to principles, laws, sequences,

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<sup>66</sup> Aristotle, "Rhetoric," in *Aristotle*, ed. Robert Maynard Hutchins, trans., W. Rhys Roberts (Chicago: University of Chicago Press, 1952), 1355a.

<sup>67</sup> Jeffrey Walker, "The Body of Persuasion: A Theory of the Enthymeme," *College English* 56, no. 1 (1994): 47.

classifications, correlations, in brief, abstractions or generalizations of one sort or another. And any generalization is necessarily a reduction in that it selects a *group* of things and gives them a property which makes it possible to consider them a *single entity*<sup>68</sup>

The way that humans verbalize their “knowledge” of the universe allows them to highlight or neglect an infinite number of interpretations.

Even the question “are we alone?” contains countless unexplored premises that are filled in by common cultural mythology. Who, for example, is the “We” that seeks to know if they are alone? Presumably the “we” represents humanity as a species, but this need not be the case. In order to be meaningful, the question presupposes that the existence of other life on the planet Earth does not warrant a negative response to the question. If the life forms on Earth do not meet the criteria for a definitive answer, it is difficult to know what would. Many astrobiologists speculate that extraterrestrials will be so alien to humanity that we may fail to recognize them as life.<sup>69</sup> These gaps in linguistic certainty allow individuals to infuse something nonideological (the state of the universe) with ideological content (humanity is special and perfectible).<sup>70</sup>

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<sup>68</sup> Kenneth Burke, *A Rhetoric of Motives* (Berkley and Los Angeles: University of California Press, 1969), 96.

<sup>69</sup> Committee on the Origins and Evolution of Life Committee on the Limits of Organic Life in Planetary Systems, National Research Council, *The Limits of Organic Life in Planetary Systems*, ed. Series, trans. Translator, Number of, Series *The Limits of Organic Life in Planetary Systems* (Original Publication; repr., Washington: The National Academies Press, 2007; reprint, Reprint) <http://www.nap.edu/catalog/11919.html> (2010); *ibid.*

<sup>70</sup> Several existentialists, for example, believed that being alone in the universe did not mean that humanity was special, but rather a terrible accident in an uncaring, unpleasant universe. The philosopher John Caputo wrote, “No one we know of knows we are here, on the little star. We are like orphans--and widows and strangers. The stars do not care, do not take care of us. We are disasters all.” John D. Caputo, *Against Ethics* (Bloomington: Indiana University Press, 1994), 225.

In addition to being a powerful form of myth because of its appearance of being nonideological, the societal view of the universe as timeless also adds to the effectiveness of cosmological rhetoric. Barthes argues that effective myth makes the contingent appear eternal.<sup>71</sup> If the Soviets did find aliens engaged in class struggle on Mars it would give credence to their belief that dialectic materialism was an inevitable result of the nature of the universe. Conversely, the Institute of Astrobotany, in the Kazakh Soviet Socialist Republic, predicted that if life were not found on Mars it would be “clear disproof of the philosophical basis of Communism.”<sup>72</sup> Definitive proof one way or another of life could represent a powerful rhetorical appeal, even though the existence or absence of Communists on Mars or other planets does not necessitate the truth or falsity of Marxist philosophy. Similarly, Plato, unable to persuade Callicles of the error in his ethics, accuses him of being out of sync with the universe.<sup>73</sup> The appeal to the eternal calls upon a force viewed as more powerful than any human creation. Ethics, art, and politics are intrinsically contingent (in that they could be rearranged to exist in a different formation by human action); individuals see the structure of the universe as necessary. Society generally views rhetorical appeals to necessary forces as less arbitrary and thus these appeals prove more effective.

The third reason that cosmology represents a particularly powerful myth is because of its connection to the physical location that we inhabit. Michael Hyde identifies the *ethos* of rhetoric as “discourse [that] is used to transform space and time into ‘dwelling places’ with the hope that “we might feel more *at home* with others and

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<sup>71</sup> Barthes, *Mythologies*, 142.

<sup>72</sup> Shklovskii and Sagan, *Intelligent Life in the Universe*, viii.

<sup>73</sup> Plato, "Gorgias," 507e-08a.

our surroundings.”<sup>74</sup> This passage introduces a series of essays on the various ways that language makes sense out of the world; absent these discourses everyday human existence would appear chaotic and inhospitable. At the risk of taking the idea of “dwelling places” too literally, I propose that the cosmologies used to describe the universe humanity inhabits represent an *a priori* rhetorical *ethos* function. Before discussions of complex social relations can develop there needs to exist a sense of what it means to live in the world, which in turn necessitates a way of interpreting the cosmos. Absent the existence of an *ethos* of place, humans could only perceive the universe as terrifying randomness.

The appearance of being grounded in objective fact, of being eternal, and its connection to humanity’s literal “dwelling place” all make cosmology a particularly powerful myth. Cosmological myths can be so powerful that it is sometimes difficult to accept it as a rhetorical construction, but as Heidegger writes,

Who the human being is—for philosophy, the answer to this problem is not inscribed somewhere in heaven...the essence of human being is *never* an answer, but is essentially a question...The question cannot be asked adequately within the domain of traditional metaphysics, which essentially remains “physics.”<sup>75</sup>

Despite their power to shape events, cosmologies will always tell us more about those who construct and use them than they will about some objective reality. Humanity’s

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<sup>74</sup> Michael J. Hyde, *The Ethos of Rhetoric* (Columbia: University of South Carolina Press, 2004), xiiv.

<sup>75</sup> Martin Heidegger, *Introduction to metaphysics* (New Haven: Yale University Press, 2000), 149.

“being” is not written into the stars, but can become manifest in the way humans position themselves in relation to the stars.

Finally, one must recognize the important role of the rhetoric of science in bolstering the persuasive power of the unity cosmology. All of the case studies I examine draw on empiricism to ground their philosophical, religious, and ethical claims. Most of the scholarship on the rhetoric of science examines scientific discourses following the 1600s. Peter Dear, for example, locates the consolidation of scientific discourse within the scientific societies of the 1640s and 1650s.<sup>76</sup> These works have enormous value for my understanding final two case studies, which take place with a firmly established scientific discourse. They also may potentially illuminate nascent scientific discourses in my first two chapters.

Scientific rhetoric plays a powerful role in conditioning audiences to accept arguments. Philip Wander argues that the standard of scientific refutation forecloses the avenues of response to all but others versed in the discourse.<sup>77</sup> This means the scientists’ ethos stands in for the ability of the audience to understand the specifics of the scientific arguments.<sup>78</sup> This is important because despite its claims to objectivity, scientific discourse can easily serve as a conduit to hide metaphysical assumptions.<sup>79</sup> I argue precisely that the scientific framework of the unity case studies I examine serves to help justify the religious, political, and ethical of the authors. Once framed as a scientific

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<sup>76</sup> Peter Dear, "Totius in Verba: Rhetoric and Authority in the Early Royal Society," *Isis* 76, no. 2 (1985).

<sup>77</sup> Philip C. Wander, "The Rhetoric of Science," *Western Speech Communication* 40, no. 4 (1976): 227.

<sup>78</sup> Judy Segal and Alan W. Richardson, "Introduction. Scientific Ethos: Authority, Authorship, and Trust in the Sciences," *Configurations* 11, no. 2 (2003).

<sup>79</sup> Thomas M. Lessl, "Science and the Sacred Cosmos: The Ideological Rhetoric of Carl Sagan," *Quarterly Journal of Speech* 71 (1985); Thomas M. Lessl, "The Culture of Science and the Rhetoric of Scientism: From Francis Bacon to the Darwin Fish," *Quarterly Journal of Speech* 93, no. 2 (2007).

question the issues of the trueness of unity, become difficult to separate from the ideological implications put forward by the rhetors.

The scientific framework also shields a large part of the unity argument from examination by the public. If one continues with the view of the cosmological argument as an enthymeme, then science supports the first premise: “we are alone.” Given the strong intellectual ethos of all of the case studies I examine it should come as no surprise that many audience members take their scientific justifications of unity as truth. With one premise so grounded in common thinking that it need not be stated (singularity makes something special) and the other (we are singular) shielded from popular inquiry by its scientific nature, it is little surprise that the cosmological argument from unity has remained such a force throughout history.

## **1.4 CONCLUSION**

Individuals throughout history do not make use of the unity cosmology as some trite metaphor or simple observation of fact. Plato first deployed the unity cosmology in one of history’s greatest culture wars in order to undermine his sophist opponents. His anti-sophists’ victory proved a decisive moment in the history of Western philosophical thinking. From then until now, the discussion of alien life frequently intertwines itself with political, religious, and philosophical debates. The unity cosmology’s denial of alien life helps its proponents imagine a purposeful, teleological existence for mankind that poses a serious challenge to relativistic viewpoints that eschew seeing history as so purpose-driven. The unity cosmology represents an argumentative strategy thousands of



years old, but largely unexplored by rhetoricians. This dissertation fills this lacuna in the communication literature, by exploring how this argumentative strategy exists throughout history and has evolved through time.

In addition to its role in many ongoing debates the unity cosmology acts to construct rhetorically what it means to be human. Society's privilege of a rhetorical ethos structured around the idea of human perfection means extraterrestrial discoveries have the potential to prove highly destabilizing. Much as the "discovery" of the American continents by the Europeans resulted in ideological confusion and ultimately violence, an ethos built on the unity cosmology confines the range of human responses to evidence of alien life to panic or some form of violence (whether physical or discursive).

The constitution of identity in relation to the nonexistence of alien life proves a crucial concern for the Communication discipline. In partial reference to extraterrestrial life, John Durham Peters writes,

"man" suddenly found many of the distinction—of species, mechanism, gender and divinity—that had once sustained his status as lord over the earth unprecedentedly permeable. The failure to recognize the paranormal and the inhuman as founding questions for communication theory in our time goes together with the failure to recognize the inhuman when it stares back at you from the mirror. Both are containment strategies, props supporting a dangerously brittle identity.<sup>80</sup>

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<sup>80</sup> John Durham Peters, *Speaking into the Air: A History of the Idea of Communication* (Chicago: University of Chicago Press, 2000).

Peters rightly makes the case that dichotomies and distinctions exist at the heart of communication. The unity cosmology intersects with these dichotomies because it presupposes alien life does not exist and thus represents an *a priori* “no” to the question of whether academics should carve out space for “aliens” within communicative theory.

My dissertation is the first in-depth case study in the way that a cosmology acts as rhetoric. The exploration of the unity cosmology as argument strategy and rhetorical ethos function should present an important addition to scholarship and open the door to rhetorical examination of other cosmological beliefs.

## 2.0 PLATO'S RHETORICAL COSMOLOGY: THE UNITY OF THE WORLD AS FOUNDATIONAL MYTH

The theme of relativism versus absolutes emerges in almost all of Plato's dialogues.<sup>81</sup> Plato believed in absolute values, the Good, Beautiful, and True, which exist independently of human society and culture. From these ideals Plato extrapolated the desirability of leading good lives, defined by behavior such as acting justly and placing group needs over individual needs.<sup>82</sup> The prevailing intellectual zeitgeist of the time favored relativism, as championed by Plato's nemeses, the sophists. In contrast to the Good, Beautiful and True, sophists typically defended more relativistic worldviews. Protagoras' maxim summed up this relativism: "of all things the measure is man, of the things that are, that they are, and of things that are not, that they are not."<sup>83</sup> The passage represents the view that all values exist only as social constructs; no values exist outside of human minds. This had serious implications for Plato's efforts to get others to lead good lives. Under Protagoras's relativistic framework,

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<sup>81</sup> John Poulakos, *Sophistical Rhetoric in Classical Greece* (Columbia: University of South Carolina Press, 1995), 89-92; Ugo Zilioli, *Protagoras and the Challenge of Relativism: Plato's Subtlest Enemy* (Burlington: Ashgate, 2007), 3-5; Mi-Kyoung Lee, *Epistemology After Protagoras: Responses to Relativism in Plato, Aristotle, and Democritus* (Oxford: Oxford University Press, 2005), 4-5; Sarah Broadie, "The Sophists and Socrates," in *The Cambridge Companion to Greek and Roman Philosophy*, ed. D. N. Sedley (Cambridge: Cambridge University Press, 2003), 76.

<sup>82</sup> Plato, "Gorgias."; Plato, *Republic*, 354-425.

<sup>83</sup> DK80b1. Pindar makes a similar claim earlier than Protagoras when he argues, "custom is king." Pindar means that rather local customs determine appropriate behavior, rather than universal truths. Baldry, *Unity of Mankind in Greek Thought*, 19.

murder, for example, is not intrinsically wrong, but only bad because society has proclaimed it so. Plato believed relativism incentivized selfish and evil behavior, even if the sophists who proclaimed it had no intention of encouraging malevolence. Protagoras's specific maxim "man is the measure" so disturbed Plato that he devoted extensive attention to it, beyond his commonly severe treatment of relativism generally.<sup>84</sup> As Ugo Zilioli writes, "[Protagoras] and his relativism were indeed the most dangerous enemy for [Plato] and the kind of objectivist doctrines he maintained."<sup>85</sup>

The debate between Plato and the sophists ultimately took place in the public sphere, with consequences for Greek society. During the time Plato wrote his dialogues (387 B.C.E.-347 B.C.E.) the sophists grew in prominence. As public speeches, trials, and voting occurred with more frequency and held more importance, a sophistic education became a valuable commodity, which raised the public standing of the teachers.<sup>86</sup> The influence of the sophists challenged the traditional ethics and social structure of Athens, because their ideas suggested that rather than being divine and preordained, the organization of society existed as only one of many possible systems. This opened class stratification up to criticism, provided the skills necessary to challenge authority, and offered an intellectual justification for democracy.<sup>87</sup> While

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<sup>84</sup> Protagoras' relativistic ideas are at the forefront of two dialogues, *Theaetetus* and *Protagoras*. Plato, "Theaetetus."; Plato, "Protagoras."

<sup>85</sup> Zilioli, *Protagoras and the Challenge of Relativism*, 14.

<sup>86</sup> John Scenters-Zapico, "The Case for the Sophists," *Rhetoric Review* 11 (1993): 355-57; G. B. Kerferd, *The Sophistic Movement* (Cambridge: Cambridge University Press, 1981), 15-17.

<sup>87</sup> Edward Schiappa, *Protagoras and Logos: A Study in Greek Philosophy and Rhetoric* (Columbia: University of South Carolina Press, 1991), 119; Mark Lawrence McPhail, *Zen in the Art of Rhetoric: An Inquiry into Coherence* (Albany: State University of New York Press, 1996), 117; Susan Carole Funderburgh Jarratt, *Rereading the Sophists: Classical Rhetoric Refigured* (Carbondale: Southern Illinois University Press, 1991), 98; W. K. C. Guthrie, *The Sophists* (London,: Cambridge University

Plato had his own criticisms of Greek society, the changes the sophists heralded were anathema to his beliefs. He believed sophistic ideas encouraged selfishness and unjust behavior, by dethroning traditional notions of the good. He felt compelled to weigh into the public debate against relativism and for absolute values, throughout his dialogues.

The consuming nature of Plato's battle against relativism makes his decision to write a cosmology surprising at first. His conflict with the sophists over the nature of values occurred in the here and now, the state of the structure of the universe does not appear to have much relevance for how one should structure society. The division between cosmology and practical philosophy widens even more when one examines the practice of astronomy at the time. The presocratic cosmologists, who set the terms for cosmological thinking, largely took a scientific approach that is empirical and not involving recourse to traditional myth to answer cosmological questions. Their method removed (if not entirely detached) their cosmologies from ethical concerns. Plato even criticized, in his early and middle dialogues, the practice of cosmology for its failure to synthesize the physical structure of the universe with morality. Ignoring cosmology except to remark on its problems, Plato focused on a variety of other rhetorical strategies to win over public opinion to his beliefs in absolute values.

In his early and middle dialogues, Plato uses math, logic, dialectic, and, above all, myths to make his case for the Good, Beautiful, and True. Plato based his own

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Press, 1971), 3-13; George Grote, *History of Greece*, vol. 8 (New York: Peter Fenelon Collier, 1844); Kerferd, *The Sophistic Movement*, 173-78. Aristophanes' *Clouds* lampoons the influence of the sophists over the youth (although he included Socrates among their number). Aristophanes, "Wasps," in *Aristophanes: Clouds Wasps Birds*, ed. Peter Meineck, trans., Peter Meineck (Indianapolis: Hackett, 1998).

myths on traditional Greek ones, as he hoped to capture their rhetorical power to sway his audiences.<sup>88</sup> In his later dialogues, however, Plato attempts, in what has become a decisive moment in the history of Western thought, a new argumentative strategy based in scientific cosmology to defeat his sophistic opponents in the market place of ideas.<sup>89</sup>

In the *Timaeus* he constructs a cosmology that in many ways mirrors the style of the presocratics, but he connects the structure of the universe with the existence of absolute values. One can simplify Plato's argument in the basic form of a syllogism,

- A. If humanity is unique in the universe;
- B. And uniqueness represents value and access to perfection;
- C. Then humanity is valuable and has access to perfection.

Plato's cosmology merges his philosophical and ethical ideals about living just lives with an argument about the structure of the universe. Most presocratics scientist, like Democritus, Anaximander, Thales and Anaximenes, defended a plurality of worlds. These figures, however, treated this cosmological question as distinct from issues of philosophy, ethics, and politics.<sup>90</sup> Plato defended a unity cosmology with the

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<sup>88</sup> I use the term traditional myths to refer to the conventional sociological usage of the term "myth" rather than the way Barthes or Burke defines myth. Catalin Partenie provides an explanation that fits my use of traditional myth. She writes, "[Plato's myths] are narratives that are non-falsifiable, for they depict particular beings, deeds, places or events that are beyond our experience: the gods, the daemons, the heroes, the life of soul after death, the distant past, etc. Myths are also fantastical, but they are not inherently irrational and they are not targeted at the irrational parts of the soul." Catalin Partenie, "Plato's Myths," *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/plato-myths/>. Cosmology does potentially overlap with these principles, which is a point that will be explored later in the chapter, but for the purposes of definitional clarity I separate out scientific cosmologies from what I refer to as traditional myths.

<sup>89</sup> Plato still makes use of traditional myths in later dialogues, like the myth of Atlantis in the *Timaeus*. I argue that he adds cosmological scientific myths to his argument repertoire, rather than replaces traditional myths with scientific ones.

<sup>90</sup> Edward Hussey, *The Presocratics* (New York: Charles Scribner's Sons, 1972), 18. Although some like Heraclitus and Xenophanes defended unity. Heraclitus is, however, a fairly complicated case,

Earth holding a central position and representing a unique abode for life and connected this universal structure with a value system. Plato borrows the scientific framework of the presocratics to legitimize his own cosmology and then infuses his depiction of the universe with meaning for how to appropriately live. Plato's cosmological argument connects humanity's cosmic aloneness with the need for the kind of just behavior that Plato advocated. This resulted in a scientific cosmology with mythological traits.

This chapter contends that Plato's connection of unity with the Good, Beautiful, and True, succeeded in advancing his beliefs, far beyond his previous strategies. The connection of scientifically-deduced unity with absolute morality struck a chord with audiences. His cosmology and its philosophical implications became a dominant meme throughout Western history and with it, so did the idea of the unity of the world. However, one must remember, as discussed in the previous chapter, that all myth's rhetorical power emerges from connecting the contingent to the eternal. Plato's scientific-mythic cosmology functions no differently. Audiences may find the connection of unity with absolute values aesthetically pleasing, but it ultimately lacks a logical foundation as an argument. Plato deploys respect for science and awe at the eternal nature of the universe, in the service of his philosophical agenda.<sup>91</sup> As we will see, Plato's cosmology can be read as a rhetorical strategy in his ongoing debate with the sophists, rather than as a claim of absolute truth.

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because some evidence exists that he did draw some principles for how to live out of his cosmology (although not connected to unity). He also does not fall within the category scientific presocratics, because he explicitly rejects knowledge seeking as a methodology. I mention him only to demonstrate the unity cosmology predating Plato. Daniel W. Graham, "Heraclitus," *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/heraclitus/#Met>; Hussey, *The Presocratics*, 31.

<sup>91</sup> The examination of the use of cosmology as a myth to defend absolute values does not mean that any attempt to prove absolute value becomes self-defeating on the grounds of its rhetoricity. First, I will make the case that Plato's cosmology emerges out of rhetorical concerns of persuasion, rather than

For Plato, victory over the sophists, rather than an accurate description of the universe, represents the *telos* (in a rhetorical reading better framed as *techne*) of his cosmology.<sup>92</sup> In order to make this case, the chapter traces the evolution of Plato's thought from his disdain of cosmology to his use of it as a rhetorical strategy. The first section details the state of cosmology during the era, including Plato's hostile attitude towards it in his early dialogues.<sup>93</sup> This early hostility gives credence to the hypothesis that Plato's deployment of cosmology primarily represents a rhetorical response to the sophists rather than a necessary component of Platonic thought. The second section highlights Plato's creation of myths written in defense of his philosophy, in his early and middle dialogues. These writings, based on traditional Greek myths, act as a rhetorical strategy against sophistic relativism. Plato's use of traditional myth establishes a model, which he later uses to graft a mythic dimension onto a scientific cosmology. The third section examines the way Plato shifts to

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scientific or philosophical objectivity. Second, more generally, absolute value, presumably, represents an immutable fact of nature. The persuasion of others to accept absolute value represents a contingent rhetorical act, which can be studied as rhetoric independent of the truth of absolute values. Marina McCoy claims that Plato often adopted the rhetorical strategies in his arguments with the sophists and the real difference between the two reflected their end goals. She examines Plato's use of rhetoric through six dialogues, but not the *Timaeus*. Marina McCoy, *Plato on the Rhetoric of Philosophers and Sophists* (Cambridge: Cambridge University Press, 2008).

<sup>92</sup> Many scholars have noted the connections between Plato's ethics and his cosmology, but only Carone comes close to describing this connection as an evolution of Plato's rhetorical strategy to lead individuals to the good. G. E. R. Lloyd, "Plato as a Natural Scientist," *Journal of Hellenic Studies* 88 (1968): 81-82, 90; T. K. Johansen, *Plato's Natural Philosophy: A Study of the Timaeus-Critias* (Cambridge: Cambridge University Press, 2004), 6; Cornford, *Plato's Cosmology*, 6; R. Ferwerda, "Democritus and Plato," *Mnemosyne* 25 (1972): 360; Carone, *Plato's Cosmology*, 3-7.

<sup>93</sup> The precise order of the dialogues is not particularly important for my central argument with the exception that the *Timaeus* and *Laws* were among Plato's later dialogues. What matters is the grouping into early, middle, and late periods, and that is a fairly standard practice among modern Platonic scholars. Zeyl, *Timaeus*, xvi-xx; Carone, *Plato's Cosmology*, 22-23; Gail Fine, "Owen's Progress: Logic, Science, and Dialectic: Collected Papers in Greek Philosophy," *Philosophical Review* 97, no. 3 (1988): 373-99. Even one of the most stout defenders of the belief that the *Timaeus* came earlier in the sequence of dialogues has recently recanted his arguments T. M. Robinson, "Mind-Body Dualism in Plato," in *Psyche and Soma: Physicians and Metaphysicians on the Mind-Body Problem from Antiquity to Enlightenment*, ed. John P. Wright and Paul Potter (Oxford: Clarendon, 2000), 47.



cosmology as argument for human beings' singularity in the universe. The final section examines the consequences of this rhetorical maneuver for Plato's thought and investigates the way that his attack on relativism becomes intertwined with the unity cosmology to the point where many thinkers throughout history see attacks on unity as attacks on absolute values.

## **2.1 STATE OF COSMOLOGY AND PLATO'S EARLY DIALOGUES**

Before Plato developed his earliest ideas there was a proliferation of cosmologies that coincided with the development of Greek scientific thought. Thales, Anaximander, and Anaximenes became the first "physicists," a term for those who study the natural world, including the universe. These early physicists embarked on a project drastically unlike those of the previous intellectual currents. Guthrie provides a succinct explanation,

The questions which excited them were of this kind: Can this apparently confused and disordered world be reduced to simpler principles so that our reason can grasp what it is and how it works? What is it made of? How does change take place? Why do things spring up and grow, then decline and die? How can one explain the alternation of day and night, summer and winter? They claim our attention by having been the first to suggest that answers to these questions may be found by taking thought. They abandoned mythological and substituted intellectual solutions. There might or might not be a divine

mind at the back of, or permeating, the works of nature (that was a question to which some of them sought an answer), but it was no longer satisfying to say that storms were roused by the wrath of Poseidon, or death caused by the arrows of Apollo or Artemis. A world ruled by anthropomorphic gods of the kind in which their contemporaries believed — gods human in their passions as well as in their outward form — was a world ruled by caprice. Philosophy and science start with the bold confession of faith that not caprice but an inherent orderliness underlies the phenomena, and the explanation of nature is to be sought within nature itself.<sup>94</sup>

Thinkers like Heraclitus, Parmenides, Zeno, Melissus, Diogenes of Apollonia, Empedocles, Anaxagoras, Philolaus, and Democritus, followed in the initial physicists' footsteps.

Cosmology served as the focus of much of the scientific thinking of the physicists and their intellectual decedents. The physicists, however, did not agree on the details of their cosmologies. For example, Thales postulated the Earth floated on a bed of water, whereas Democritus believed void surrounded the Earth. But all physicists shared a commitment to a nascent scientific method. The physicists and their intellectual heirs broke with the previous cosmologies that relied on religious explanations for the creation and function of the universe, and instead offered

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<sup>94</sup> William Keith Chambers Guthrie, *A History of Greek Philosophy: The Earlier Presocratics and the Pythagoreans* (Cambridge: Cambridge University Press, 2000), 44-45.

cosmologies built on natural explanations derived from logic and observation.<sup>95</sup>

These thinkers in most cases isolated their scientific observations from their religious and moral thinking.<sup>96</sup> The gulf between empirical observation and logical speculation, and ethical principles kept one major intellectual contemporary of the Greek

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<sup>95</sup> Several prominent early works challenged the idea that the presocratic cosmologists operated under a scientific methodology. Cornford and Jaeger argue that the work of the presocratics resembled theology much more than science. Francis MacDonald Cornford, *From Religion to Philosophy: A Study in the Origins of Western Speculation* (Princeton: Princeton University Press, 1991); Francis MacDonald Cornford, *Principium Sapientiae* (Cambridge: Cambridge University Press, 1952); Werner Wilhelm Jaeger, *The Theology of the Early Greek Philosophers* (New York: Oxford University Press, 1947). Even at the time of its writing, however, Cornford's thesis stood out as a highly contrarian position. The view of the presocratics as primarily theological or not scientific has largely faded from the academic discourse, although the question of how scientific the presocratics were remains open for debate. Even if the presocratics did not endorse all of the elements of modern science, however, they are widely credited as either founding the discipline or among its earliest practitioners. Gregory Vlastos, "Cornford's *Principium Sapientiae*," in *Studies in Presocratic Philosophy*, ed. David J. Furley and R. E. Allen (New York: Humanities, 1970), 50-55; Walter Burkert, "The Logic of Cosmogony," in *From Myth to Reason?: Studies in the Development of Greek Thought*, ed. Richard Buxton (Oxford: Oxford University Press, 1999), 104-06; Hussey, *The Presocratics*, 154, 55; Keimpe Algra, "The Beginnings of Cosmology," in *The Cambridge Companion to Early Greek Philosophy*, ed. A. A. Long (Cambridge: Cambridge University Press, 1999), 60-63; M. R. Wright, *Cosmology in Antiquity*, Sciences of antiquity (London: Routledge, 1995), 4, 5; Gregory Vlastos, "Ethics and Physics in Democritus," in *Studies in Presocratic Philosophy*, ed. R. E. Allen and David J. Furley (Atlantic Highlands, NJ: Humanities Press, 1975), 383; Vlastos, *Plato's Universe*, 18-22; Nicholas Rescher, *Cosmos and Cognition: Studies in Greek Philosophy* (Piscataway, NJ: Transaction, 2005), 26; Karl Popper, "Back to the Presocratics," in *Studies in Presocratic Philosophy*, ed. David J. Furley and R. E. Allen (New York: Humanities, 1970); G. S. Kirk, "Popper on Science and the Presocratics," in *Studies in Presocratic Philosophy*, ed. David J. Furley and R. E. Allen (New York: Humanities Press, 1970).

<sup>96</sup> Furley argues that Pythagoras' cosmology may have been the first to merge the new scientific thinking with religious and ethical beliefs. David J. Furley, *The Greek Cosmologists* (Cambridge: Cambridge University Press, 1987), 59. Furley does not provide a response to Walter Burkert's well-argued case against Pythagoras as a scientist. Walter Burkert, *Lore and Science in Ancient Pythagoreanism*, trans. Edwin L. Minar Jr. (Cambridge: Harvard University Press, 1972), 208-17. More recently, Huffman goes back through the fragments from Pythagoras and his followers and demonstrates that many of the scientific views attributed to Pythagoras really belong to his students. Huffman argues, "Pythagoreanism has no room for examination of ideas and philosophical argument but is based on the authority of its founder. The later tradition reports that Pythagoreans felt no need to argue for positions and rested content with the primary assertion that 'he himself said it.'" Pythagoreas' student Empedocles later shows how Pythagorean ideas are compatible with scientific theories and another follower Philolaus moves away from the metaphysical aspects of Pythagoreanism to develop its scientific and mathematical aspects. Carl A. Huffman, "The Pythagorean tradition," in *The Cambridge Companion to Early Greek Philosophy*, ed. A. A. Long (Cambridge: Cambridge University Press, 1999), 75, 76-85. Even if Plato is not the first to make the connection between scientific cosmology and ethical values he still deserves study. Coming second to the Pythagoreans, Plato's cosmology would still be among the first uses of a scientific cosmology to justify ethics and more definitively the first of such cosmologies that persist to this day. Later in the chapter I present the divergent scholarly on to what extent Plato's cosmology represented a scientific endeavor.

cosmologists, Socrates, from dabbling in the practice.<sup>97</sup> Plato, Socrates' most famous student, appeared to take a similar approach in his early dialogues.

In the *Phaedo* Plato depicts Socrates as initially intrigued by the ideas of Anaxagoras, one of the earliest Greek cosmologists, "I was ready to find out in the same way about the sun and the moon and the other heavenly bodies, about their relative speed, their turnings and whatever else happened to them, how it is best that each should act or be acted upon."<sup>98</sup> Socrates sees potential in cosmology to act as a method for truly understanding the Good. Upon reading Anaxagoras' writings, however, Socrates realizes that Anaxagoras does not describe cosmology in terms of what is good, but instead as the result of a series of scientific processes. He claims Anaxagoras wastes his time because he does not examine the celestial objects through the lens of their "capacity of being in the best place they could possibly be put."<sup>99</sup> Anaxagoras' materialist approach displeases Socrates because it fails to provide a model for the Good that can be useful on Earth. Plato argues that if the stars rotate in the best possible arrangement it would help elucidate principles of the Good that could be helpful in social interactions. Plato makes clear his critique extends beyond Anaxagoras to all of the cosmologists of the time when he describes Socrates as saying,

It is what the majority appear to do, like people groping in the dark; they call it a cause, thus giving it a name that does not belong to it. That is why one man

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<sup>97</sup> Wright, *Cosmology in Antiquity*, 6.

<sup>98</sup> Plato, "Phaedo," in *Plato Complete Works*, ed. John M. Cooper (Indianapolis: Hackett, 1997), 99b.

<sup>99</sup> Ibid., 99c.

surrounds the earth with a vortex to make the heavens keep it in place, another makes the air support it like a wide lid.<sup>100</sup>

Here Plato references ideas that from the popular cosmologies of the time in order to dismiss the field as “groping in the dark.”

Similarly, in the *Thaetetus*, Plato has Socrates retell an old joke about the astronomer Thales, rumored to have fallen in a well because he was so distracted staring at the stars.<sup>101</sup> Socrates goes on to contrast astronomers with true philosophers, who concern themselves with issues critical for how to live on Earth. Plato sets up a crucial contrast between astronomy and his own search for the Good, the Beautiful, and the True. Astronomers disconnect themselves from the daily affairs of humanity, preferring to “keep their heads in the clouds.” In contrast, Plato believes philosophers should focus their attention on how one should best live her or his life.

Socrates initially objected to astronomy because astronomers focused on celestial objects to the exclusion of important questions on Earth. This can be read as an indictment of the way certain astronomers practiced their craft rather than the discipline of astronomy. A different astronomy could potentially avoid this criticism, for example, if one examined astronomy from the perspective of the Good. Plato, however, provides additional critiques of astronomy in *Rival Lovers* and *Republic* that are more intrinsically connected to the practice of astronomy itself.

In the *Rival Lovers* Socrates stumbles upon two boys debating astronomy, or as an onlooker in the dialogue points out, “babbling about things up in the sky and

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<sup>100</sup> Ibid., 99b.

<sup>101</sup> Plato, *Thaetetus*, 174a.

talking philosophical nonsense.”<sup>102</sup> Socrates takes offense at the idea that philosophy is nonsense, but later in the dialogue seems to agree that what the boys were doing was nonsense. One rival lover tries to convince Socrates that philosophy means learning as much as possible in all the subjects. Socrates indicates that the true philosopher must specialize solely in philosophy and not dilute knowledge by learning so many different subjects. Socrates suggests that the rival lovers may have thought they were discussing philosophy, but in reality they were discussing astronomy and thinking it was philosophical. Although the dialogue focuses on academic pluralism in general, the fact that it begins with an argument about cosmology suggests Plato rejects cosmology as part of the philosophical project. The idea that cosmology detracts from one’s ability at philosophy ends the possibility (still an open question in the *Phaedo*) that one could carry out cosmology in a philosophical manner.

In the *Republic*, Plato includes astronomy in the list of subjects that should be studied by the guardians, which at first appears to represent a major change in his thought. He, however, believes that astronomy should be dramatically reenvisioned from the way astronomers conducted it at the time. He refers to the current astronomers as those who seek to understand higher powers by, “studying ornaments on a ceiling.”<sup>103</sup> The actual celestial objects move too “slow or fast” for Plato, meaning that their actual physical movements do not conform to the Good as defined

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<sup>102</sup> Plato, “Rival Lovers,” 132b. Some academics have called into question Plato’s authorship of *Rival Lovers*. This chapter operates under Julia Annas’ belief that the evidence provided for this claim is relatively weak and it is reasonable to assume that that Plato did in fact write the dialogue. Julia Annas, “Self-knowledge in Early Plato,” in *Platonic Investigations*, ed. Dominic J. O’Meara (Washington, D. C.: Catholic University of America Press, 1985), 111-15. Even if Plato did not write *Rival Lovers* it makes little difference for my overall argument, given the pattern of Plato’s hostility to astronomy in his other early dialogues.

<sup>103</sup> Plato, *Republic*, VII 529a

as “geometrical figures.”<sup>104</sup> Plato believes that rather than studying the actual orbits of celestial objects, astronomy should act as a form of four-dimensional geometry. This approach would have students work on theoretical problems involving mathematic ratios and “leave the things in the sky alone.”<sup>105</sup> Plato’s theoretical astronomy required students to focus on perfect ratios and other harmonious constructions rather than the messy reality of celestial movement. Plato suggests that looking for higher meaning in celestial motion represents a danger, because the objects move in discordant ways. For Plato the study of discord is not compatible with a search for the Good.

These four dialogues indicate that Plato had little use for cosmology. In the *Phaedo* Plato argues that cosmology is something different than the philosophical project. In the *Thaetetus* he jokes about how astronomers focus so much attention to the stars that they cannot see what lies directly in front of them. In *Rival Lovers* he expands this critique to say that studying cosmology detracts from one’s ability as a philosopher. In the *Republic* he goes further saying that studying celestial movements actually gives a warped sense of the Good, because the celestial objects move in an unharmonious manner. Given the importance of harmony to Plato’s philosophy this last criticism represents a fairly serious indictment of astronomy.

Despite these seemingly harsh criticisms, however, the cosmologists in Plato’s early and middle dialogues play relatively peripheral roles as intellectual antagonists. For the most part Plato does not attack the practice of cosmology directly. Instead, he accuses it of failing to confront the issues of ethics and morality at the center of his

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<sup>104</sup> Ibid., VII 529d.

<sup>105</sup> Ibid., VII 530 b-c

dialogues. Despite his suggestion that astronomy warps one's ethical values, Plato realized that many of the cosmologists of the time actually shared his values. Democritus proposed the cosmology most in opposition to the cosmology Plato later presents in the *Timaeus*, where random chance and chaos represent the dominant forces in the universe. Yet Democritus agreed with Plato on many important issues of ethics and morality and specifically opposed Protagoras' dictum, "Man is the measure of all things."<sup>106</sup> But in his later dialogues, Plato would not only directly assail the prevailing cosmologies, but also create his own cosmology that was rooted in his philosophy of the Good, the Beautiful and the True. In order to understand why Plato advances his own cosmology in his later dialogues and viciously attacks (rather than indirectly reproaches) other cosmologists one needs to examine Plato's rhetorical strategies throughout his early and middle dialogues. One of these strategies was to employ traditional myth in his argumentation. When that failed, Plato turned, as we will see, to empiricism.

## 2.2 MYTH AND RHETORIC IN PLATO'S DIALOGUES

In his early and middle dialogues Plato relied extensively on traditional myth in order to persuade others of his beliefs. In his later dialogues he shifts away from such a heavy dependence on traditional mythology. Cosmological appeals become Plato's

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<sup>106</sup> Vlastos, "Ethics and Physics in Democritus," 382, 96-98; C. C. W. Taylor, "The atomists," in *The Cambridge Companion to Early Greek Philosophy*, ed. A. A. Long (Cambridge: Cambridge University Press, 1999), 197; Wright, *Cosmology in Antiquity*, 175-77; Hussey, *The Presocratics*, 112-13; James Warren, *Presocratics* (Berkeley: University of California Press, 2007), 11.



new argument strategy to convince others to believe in the Good, Beautiful, and True. The next section traces Plato's use of myth in order to provide the background for Plato's cosmological turn.

Plato's grasp of the power of traditional myth played an important part in his repertoire of persuasion he deployed in his dialogues. He understood that mythology played a crucial role in shaping the beliefs of a citizenry, independent from that mythology's relation to fact. Plato's philosophical program centered on the Good, Beautiful, and True, but the Sophists and others had placed these ideas under relentless attack from the perspective of relativism and materialism. The supernatural figures of traditional mythology allowed Plato to ground his conceptions of the Good, Beautiful, and True in a veneer of the eternal, just as the Homeric mythology had provided a foundation for Greek ethics.<sup>107</sup> One should not be surprised then that all of Plato's dialogues have "mythical characters and motifs" and starting with the *Protagoras* and *Gorgias* (regarded as the last of the dialogues from Plato's early period), all of Plato's dialogues contain myths (here I mean the mythology in the traditional sense of legendary stories).<sup>108</sup> Some of the myths are well-known legends altered or combined to help him make his point. Other myths, like the tale of Atlantis, Plato likely made up entirely.<sup>109</sup>

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<sup>107</sup> Charles Griswold, "Plato on Rhetoric and Poetry," *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/plato-rhetoric/#RepII>.

<sup>108</sup> Catalin Partenie, ed. *Plato's Myths* (Cambridge: Cambridge University Press, 2009), 1.

<sup>109</sup> *Ibid.*, xiii; Luc Brisson, *Plato the Myth Maker*, trans. Gerard Naddaf (Chicago: University of Chicago, 1998), 11, 14.

Partenie argues that Plato used traditional myth to make his philosophy more accessible.<sup>110</sup> She makes a compelling case, but the evidence also suggests that Plato understood the rhetorical power of myth. This does not represent a simplification of his philosophy useful solely in expanding the audience, but rather draws on the power of myth as a persuasive device.<sup>111</sup> In the *Republic*, Plato argues that individuals,

shape their children's souls with [myths] more than they shape their bodies by handling them....The young can't distinguish what is allegorical from what isn't, and the opinions they absorb at that age are hard to erase and apt to become unalterable.<sup>112</sup>

Plato believed that teaching children myths could ensure that their opinions become “unalterable,” which if true represents a strong rhetorical tactic. Although in this quote he references children, Plato later goes on to discuss the power of myth more generally when he says the poets, “persuaded many people to believe” the myth of the Ages of Man.<sup>113</sup> Plato believes that myths so easily persuade the public that a myth with a problematic moral should be hidden from the public even if it is true.<sup>114</sup> Plato's respect for the power of myths to shape society makes it unsurprising that he made frequent use of them.

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<sup>110</sup> Partenie, ed. *Plato's Myths*, 6.

<sup>111</sup> Brisson, *Plato the Myth Maker*, 77-85.

<sup>112</sup> Plato, *Republic*, 377c.

<sup>113</sup> Ibid.

<sup>114</sup> Ibid., 378a.

In the *Timaeus*, Plato has Critias tell the tale of the city of Atlantis. According to the story Atlantis was a “vast power” that eclipsed all of Athen’s accomplishments “in magnitude and excellence.”<sup>115</sup> Despite the city’s military strength and technical achievements, however, it ultimately collapsed because it lacked justice. The myth serves as a cautionary tale for those that would put the search for material gain ahead of morality. In the *Gorgias*, Plato tells of gods judging the souls of humans in the afterlife as a justification for good behavior.<sup>116</sup> This myth functions very similarly to the myth of Atlantis. Material pleasures at the expense of just behavior in the present risk punishment in the future.

Unfortunately for Plato, the use of traditional myths, which centered on divinities, mystical locals, and ancient peoples, posed two distinct problems. The existence of a long-held set of mythological beliefs passed on through the work of the poets, in which the gods and goddesses behaved in ways unbecoming the Good, Beautiful and, True, represented the first obstacle to Plato’s use of myths. Plato had no ability to distinguish the truth-value of the new and altered myths he told as arguments for his philosophy, from the old Greek myths, which contained wanton sex, violence, and other dishonorable activities. The problematic morals of Greece’s prevailing mythology troubled Plato so deeply that he vehemently attacked the poets, whose mythology he believed promoted values inconsistent with his philosophy.<sup>117</sup> Even though one could use myth for noble causes, the degenerate nature of Greek myths made this a difficult endeavor.

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<sup>115</sup> Plato, *Timaeus*, 25d.

<sup>116</sup> Plato, “Gorgias,” 523a-27e.

<sup>117</sup> Plato, “Ion,” in *Plato Complete Works*, ed. John M. Cooper (Indianapolis: Hackett, 1997); Plato, *Republic*, 365a-66a, 414d-15d, 379a-82d, 91a-95b, 599c-606b.

Nor could Plato simply create his own myths with good morals to replace the common myths. In the *Republic*, the character Adeimantus expresses the difficulty involved in generating new, superior myths and separating his new good myths from Greece's old problematic myth,

If [the gods] do exist and do concern themselves with us, we've learned all we know about them from the laws and the poets who give their genealogies--nowhere else. But these are the very people who tell us that the gods can be persuaded and influenced by sacrifice, gentle prayers and offerings.<sup>118</sup>

The Gods of Homeric myth did not believe in absolute ideals like Plato, but rather, like the sophists taught their patrons, one could "persuade" the gods with rhetoric in the form of "prayers and offerings."<sup>119</sup> Socrates later agrees and says that it would take a sustained effort to entrench a new myth and it would likely take at least a generation before the public believed it.<sup>120</sup> Most of Plato's myths begin by him retelling a legend that he has overheard, which would have no more claim to truth than the old myths that children would have been taught from a young age.

The move to secularism in Athens represents the second problem for Plato's use of traditional myths. Even if Plato effectively created and disseminated a myth, it may not have done him much good as Athenians at the time began a serious move away from old-fashioned myths centered on Gods, heroes, and monsters. The massive

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<sup>118</sup> Plato, *Republic*, 365e.

<sup>119</sup> The problematic nature of the Homeric gods goes way beyond their susceptibility to persuasion. The myths of the Olympians tell stories of endless bad behavior, from murder to adultery.

<sup>120</sup> Plato, *Republic*, 414d-15d.

suffering of the plague caused morality to collapse as people struggled for survival.<sup>121</sup> The Peloponnesian league defeated Athens subjecting the city to rule by tyrants for thirty years, which called into question the idea of divine protection.<sup>122</sup> Playwrights publically attacked religious attitudes. Euripides used his plays to ask how the Gods could exist in the face of such extensive misery. Critias' play *Sisyphus* had a leader who invented a religion to better control the population, much as Plato literally suggests in the *Republic*. The emergence of materialist cosmologies must have added another argument in favor of abandoning the traditional religious ethics. Whether or not materialism actually became the majority opinion among Athenians, it had taken hold of the intellectual climate and many scholars believe that Plato personally felt that it held enormous sway over academic discourse.<sup>123</sup>

The difficulties facing traditional myth may lead one to question why Plato relied on them throughout his dialogues. Some truth likely lies in Partenie's claim that myth helped elucidate points in ways that made the dialogues more broadly accessible. Brisson argues that passages in the *Protagoras* and *Timaeus* suggest audiences like hearing myths for aesthetic reasons.<sup>124</sup> Beyond these motives, Plato likely hoped to find a way to recapture the previous power of myth to control the population. As many problems as Plato had with the Homeric myths, the societal move away from them coincided with the rise of the sophists. These traditional myths, as flawed as

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<sup>121</sup> Thucydides, *History*, trans. P. J. Rhodes, vol. 2 (Warminster: Aris & Phillips, 1988), II.48-55.

<sup>122</sup> Wright, *Cosmology in Antiquity*, 172; Mircea Eliade, *Myth and reality* (New York: Harper & Row, 1963), 1, 2, 153-55; Hussey, *The Presocratics*, 110.

<sup>123</sup> Ferwerda, "Democritus and Plato," 357, 58; Wright, *Cosmology in Antiquity*, 175; Gregory Vlastos "Cornford's Principum Sapientiae," in *Studies in Presocratic Philosophy*, ed. David J. Furley and R. E. Allen (New York: Humanities, 1970), 23-25. Of course, materialism's rise as a force within ancient Greece is complicated and many elements of mysticism remained long after the presocratics and in some cases peacefully coexisted within the ideas of some of the presocratics.

<sup>124</sup> Brisson, *Plato the Myth Maker*, 83-84.

they were, had helped create a barrier to relativism that had held for much of Greece's history.

In fact, only after the disasters befell Athens and the public faith was shaken did sophists and others really begin to point out the problematic morals of Homeric mythology. Atheism helped give rise to relativistic thinking, which allowed for individuals to problematize the content of the Homeric myths, which opened up more individuals to atheistic thinking. This cycle made the two problems for traditional myth I identified above mutually reinforcing. By using traditional myth Plato likely felt he could appeal to those that still believed in traditional mythology, but now heard Pindar and others point out that Homeric myth's questionable content did not justify moral behavior.<sup>125</sup> Plato hoped to create a new mythology, similar in structure to the traditional myths, but harmonious with his philosophical ideals. This new mythology could potentially stop the self-reinforcing move away from myths and return the social stability that existed before the sophists.

Unwilling to surrender the use of mythology, but aware of the difficulties I mentioned above, Plato explored techniques to recapture the power of the traditional myths and deploy them to support his philosophy. In the *Republic*, Plato advocates sustained effort to eliminate many of the older traditional myths from Homer and Hesiod,

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<sup>125</sup> Ibid., viii; Plato, "Gorgias," 488b. Euthyphro, from the eponymously named dialogue, fits into the category of one who still believes in the gods, but views their immorality as a justification for impious actions. Plato, "Euthyphro."

We must first of all, it seems, supervise the storytellers. We'll select their stories whenever they are fine or beautiful and reject them when they aren't... Many of the stories they tell now, however, must be thrown out.<sup>126</sup>

Plato goes so far in the *Republic*, as to endorse legal censorship of myths that he believed were problematic.<sup>127</sup> This move suggests Plato's undying belief in the power of myth to shape society if deployed correctly.

Plato's call to censor the myth-telling poets in his middle dialogues represents a radical shift from his early dialogues. Vlastos summarizes the severity of the change between Socrates in Plato's early and middle dialogues when he writes,

[Early Socrates'] mission 'to live philosophizing, examining [him]self and others' (Ap. 28e), those 'others' being 'anyone of you I happen to meet,... young or old, citizen or alien' (29d-30d). He believes that 'the unexamined life is not worth living by a human being' (Ap. 38a)." By contrast, [Socrates'] project in the *Republic*, where only "an exceptionally gifted, rigorously trained elite" practice philosophy "after they have completed their qualifying mathematical studies," would appear to [early Socrates] to "condemn the great majority of its citizens... to life 'not worth living by a human being.' In the whole history of Western thought no philosophy has been more populist in its

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<sup>126</sup> Plato, *Republic*, 377bc.

<sup>127</sup> Ibid., 385bc.

outreach than [early Socrates'], none more elitist than Socrates' [middle period].<sup>128</sup>

Here, given the adverse historical circumstances, it may not have been that Plato became more elitist, so much as he was desperately searching for any strategy that would bring people to the Good.

Plato's own early and middle dialogues suggest that his philosophy had difficulty making converts, whether he spread his ideas to everyone or tried to restrict them to the elite. In the *Gorgias*, for example, Socrates says that most people agree with Calicles, the nihilistic, self-interested, materialist.<sup>129</sup> In other words, Plato's potential audience was more interested in unsavory ideas than in the Good. Similarly, Plato has his characters lament how easily the public is misled in the *Republic*.<sup>130</sup> Plato's desire to restrict the audience of his philosophy may have been a result of practical, rather than philosophical reasons. Rather than suggest that Plato gave up on the philosophical project it seems more likely that Plato's failure to impact social practice meaningfully by dialogue alone made him more cognizant of the realities of creating a society based on the Good. Even though the citizens of the *Republic* may not have lived examined lives, Plato reasoned the Guardians could trick them into leading good lives.

Unfortunately for Plato, the model in the *Republic* also faces numerous problems as a method for encouraging people to live a good life. Plato does not even

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<sup>128</sup> Gregory Vlastos, "Socrates," in *Socrates: Critical Assessment*, ed. W. Prior (London: Routledge, 1996), 139.

<sup>129</sup> Plato, "Gorgias," 511b

<sup>130</sup> Plato, *Republic*, 491b-95a.



seem very enthusiastic about the chances of an ideal city coming about in the *Republic*. This view may have been further bolstered by a failed attempt by Plato to direct the governance of Syracuse.<sup>131</sup> The *Timaeus* begins with the story of Atlantis, a city in the model of the Plato's ideal republic that ultimately collapses because of hubris. This further indicates that by the time Plato writes the *Timaeus* his belief that the governmental structure represents a sound starting point for ethical change has dissipated.

### 2.3 SCIENCE, MATHEMATICS, AND EMPIRICAL ARGUMENT IN PLATO'S DIALOGUES

Given the public rejection of traditional myths generally, the ubiquity of problematic traditional myths and the difficulty of imposing new traditional myths, it is unsurprising that Plato would try other strategies to lead individuals to the Good. Among these strategies one can find moves by Plato to use scientific and empirical argument that foreshadow his turn to cosmology. In the *Meno*, for example, Plato presents an experiment with a slave boy to prove that morality exist independently from the human mind.<sup>132</sup> No evidence exists as to whether this experiment convinced others of his philosophy, although its absence from Plato's other dialogues suggests it

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<sup>131</sup> Plato, "Letter VII." Some scholars have questioned the authorship of all of the thirteen letters Thrasyllos attributed to Plato in his edition of Plato's works. The seventh letter may have been written by someone other than Plato, which would call into question the veracity of the claim that Plato engaged in the politics of Syracuse. John M. Cooper suggests the seventh letter is "the least unlikely to have come from Plato's pen." John M. Cooper, "Letters," in *Plato: Complete Works*, ed. John M. Cooper (Indianapolis: Hackett, 1997), 1635.

<sup>132</sup> Plato, "Meno," 92a-100b.

did not. Evidence does exist for the public reaction to another attempt to offer evidence for the Good, Beautiful, and True. Plato reportedly offered a free lecture on mathematics, which he attempted to connect with his philosophical program. His lecture ended in disaster when much of the audience left in the middle of his speech.<sup>133</sup> Even if this event did not occur, there is more solid evidence to support the notion that the public dismissed Plato's melding of math and ethics. In *Greater Hippias*, Plato has Hippias reference the population's disinterest in math and harmony; the very alternatives Plato believed could replace ancient myth.<sup>134</sup>

Plato's philosophical project centers on encouraging individuals to lead moral lives, but historical evidence and his own dialogues suggest that a sophistic value system continued to dominate public thinking. Plato deployed myth, math, and empirical experiments as tools in order to convince his readers and listeners to live justly. If one views Plato's ultimate goal as persuading individuals to behave in a manner befitting the Good, Beautiful, and True, one should not be surprised that Plato altered his rhetorical strategies over time in an effort to best reach the most people.

## 2.4 PLATO'S RECONCILIATION WITH COSMOLOGY

Plato first invokes cosmology in a positive light (and may first invoke cosmology at all, depending on the chronology of the dialogues) in the *Gorgias* when Socrates debates with Callicles. Callicles proves a particularly difficult opponent for Plato

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<sup>133</sup> Aristoxenus, *Elements of Harmony*, II, 30-1 in John Niemeyer Findlay, *Plato: The Written and Unwritten Doctrines* (New York: Humanities Press, 1974), 413.

<sup>134</sup> Plato, *Greater Hippias*, 285b-e.

because of his shameless disregard for the conventional standards of the Good. Socrates cannot get Callicles to concede points in the same way he could Gorgias and Polus. The dialogue stretches until Callicles refuses to answer any more questions, which he argues are irrelevant to the ethical issues at hand.<sup>135</sup> After Callicles cedes the floor, Plato closes the dialogue by referencing both cosmology and the judgment of souls.<sup>136</sup> The idea that souls will be judged does not seem out of place since Plato refers to this myth in his earlier dialogue *Phaedo*.<sup>137</sup> The reference to cosmology does seem strange, however, given his critique of it in his other early dialogues. Plato has Socrates say,

Yes, Callicles, wise men claim that partnership and friendship, orderliness, self-control, and justice hold together heaven and earth, and gods and men, and that is why they call this universe a world order, my friend, and not an undisciplined world-disorder. I believe that you don't pay attention to these facts, even though you're a wise man in these matters.<sup>138</sup>

The passage does little to explore the details of what he means by "world order," so much so that without further background knowledge it can easily be read independently of the structure of the universe. The Greek words Plato uses strongly

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<sup>135</sup> Plato, "Gorgias," 505d.

<sup>136</sup> The judgment of the souls is the myth I mentioned previously, when discussing Plato's use of myth in the *Gorgias*.

<sup>137</sup> Plato, "Phaedo," in *Plato: Complete Works*, ed. John M. Cooper, trans., G.M.A. Grube (Indianapolis: Hackett 1997).

<sup>138</sup> Plato, "Gorgias," 507e-08a.

suggest that he references the universe, however.<sup>139</sup> Given this knowledge, one can read this passage to say that something about the structure of the universe justifies behaving in concordance with traditional morality. Callicles' rejection of "partnership and friendship, orderliness, self-control, and justice," means that he operates out of step with the "world order." Contrary to Callicles' belief that nature justified might over right, nature in the form of the universe, actually supports just behavior. This quote provides an important milestone in Plato's thinking, because it connects the question of cosmology to ethics. Plato suggests here that cosmology can serve as model for order that guides how humans should live their lives.<sup>140</sup>

One should note that in the *Gorgias* when Plato has Socrates debate a morally unscrupulous fellow, like Callicles, Socrates is unsuccessful in his use of dialectic to change the mind of his opponent. The dialogue ends with Plato lecturing Callicles and referencing both cosmology and religion (the idea that humans have souls that are judged) because Callicles accepts the existence of the soul---a surprise given his distaste for traditional ethics and the increasing popular rejection of religion.<sup>141</sup> But even with Callicles' belief in the soul it is debatable whether Plato ended the dialogue to Socrates' advantage. Charles Kaufman argues that Plato's monologue represented a collapse of the dialectic and the equivalent of a Hail Mary turn to a rhetorical

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<sup>139</sup> The term world order was interchangeable with the Greek word for universe and the words used to claim friendship held together the universe reemerges in Plato's cosmology in the *Timaeus*. Carone, *Plato's Cosmology*, 7-8; John M. Cooper, ed. *Plato Complete Works* (Indianapolis: Hackett, 1997), 1237 footnote 13.

<sup>140</sup> Plato shied away from this cosmological argument in his other early and middle dialogues, because astronomers' depictions of the universe did not support the idea of a world order, but instead of a world disorder.

<sup>141</sup> Plato, "Gorgias," 501a-01d.

appeal.<sup>142</sup> Plato's reliance on metaphysical principles when debating relativistic opponents represents a strategy that would likely have begun to lose its effectiveness. Nonetheless, this issue provides the context in which Plato begins to write his own cosmology in his later dialogues the *Timaeus* and *Laws*.

In the *Timaeus*, Plato expands on the brief, though important, invocation of cosmology found in *Gorgias*. Now, however, cosmology—sans judgment in the afterlife—serves as the central focus of the dialogue, though the function of cosmology remains similar--- a demonstration of why one should live a good life. In the middle of the dialogue Plato presents a defense of empirical study in general and argues for cosmology specifically as a method to discover the Good:

Let us conclude, then, our discussion of the accompanying auxiliary causes that gave our eyes the power which they now possess. We must next speak of that supremely beneficial function for which the god gave them to us. As my account has it, our sight has indeed proved to be a source of supreme benefit to us, in that none of our present statements about the universe could ever have been made if we had never seen any stars, sun or heaven. As it is, however, our ability to see the periods of day-and-night, of months and of years, of equinoxes and solstices, has led to the invention of number, and has given us the idea of time and opened the path to inquiry into the nature of the universe. These pursuits have given us philosophy. A gift from the gods to the mortal race whose value neither has been nor ever will be surpassed. I'm quite

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<sup>142</sup> Charles Kaufman, "Argument as Enactment in the *Gorgias*," *Philosophy and Rhetoric* 12, no. 2 (1979).

prepared to declare this to be the supreme good our eyesight offers us. Why then should we exalt all the lesser good things, which a non-philosopher would “lament and bewail in vain”? Let us rather declare that the cause and purpose of this supreme good is this: the god invented sight and gave it to us so that we might observe the orbits of intelligence in the universe and apply them to the revolutions of our own understanding.<sup>143</sup>

The passage indicates a major change from Plato’s previous attitude towards cosmology. In the *Republic* Plato specifically denounces an empirical approach to astronomy. Here he advocates using the power of our eyes to chart the heavens. He even claims that scientific exploration of the universe led the way to the development of math, and ultimately his cherished practice of philosophy.

Plato can now advocate an empirical approach, because of the changes in his cosmology that made it different from those of other astronomers. Immediately after the above passage about empirical observation, Plato discusses one major change: the orderly orbit of the celestial objects,

For there is a kinship between them, even though our revolutions are disturbed, whereas the universal orbits are undisturbed. So once we have come to know them and to share in the ability to make correct calculations according

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<sup>143</sup> Plato, "Timaeus," 47a-c.

to nature, we should stabilize the straying revolutions within ourselves by imitating the completely unstraying revolutions of god.<sup>144</sup>

Unlike humanity the celestial objects move in complete harmony, but this distinction does not deny the possibility for “kinship” between them and us. Once astronomers calculate the perfect orbits of the celestial objects, these “unstraying revolutions” can serve as a model for how to correctly live. The ideas of order and harmony have run throughout Plato’s dialogues as justifications for absolute values over relativism, including his use of math and traditional myths on the judgment of souls. To model oneself on the perfect orbits of the celestial objects means conforming to Plato’s views on how to live a just life.

The justification of an empirical, scientific defense of ethics, while surprising given Plato’s previous statements, actually conforms to his ultimate goal of defeating relativism. Plato’s cosmology suggests the very structure of the universe argues against Protagoras’ dictum, “man is the measure of all things.” In the *Gorgias*, Socrates accuses Callicles of acting out of step with the cosmos. The *Timaeus* provides the empirical justification for why the cosmos denies moral relativism. A comparison of Plato’s cosmology with Democritus’, serves as a useful tool to illuminate the ways in which Plato’s *Timaeus* links science and ethics. Democritus serves as a useful foil because he created the most recent major cosmology, his

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<sup>144</sup> Ibid., 47c.

cosmology most radically opposes Plato's own, and, because, he shared many of Plato's ethical values despite the differences between them.

Democritus argued that the universe was comprised of an infinite number of atoms (the tiniest component matter can be broken down into). These atoms moved randomly and were distributed randomly. The combination of random movement and infinite atoms results in an infinite number of universes (its difficult to assess how exactly the ancient Greeks understood this term because their understanding of the structure of the universe is different than our own, it may be helpful to imagine a structure resembling visible space, but finite). He argued that some of these infinite universes would have no inhabitants, while others would have life, some universes would have a sun, and others would not.<sup>145</sup> Democritus' vision of the cosmos differed radically from Plato's singular and structured universe.

Despite Democritus and Plato's shared values, one can easily imagine why such a cosmology would not serve as an effective empirical justification of absolute ethics. Democritus' cosmology describes nature as random and contingent rather than absolute. The possibility of worlds radically different than our own calls into question a teleological worldview. If one accepts Democritus' cosmology, after all, how can one find absolute values in the structure of the cosmos if what leads an individual to live a good life on our planet may result in the opposite on some other planet? Despite their shared rejection of Protagoras' dictum, "man is the measure of all things," Democritus' cosmology appears very much in line with that philosophy. In order to

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<sup>145</sup> Furley, *The Greek Cosmologists*, 136-40. Hippolytus, *Refutations* 1.13.2 = DK 6840, Aristotle, *Physics* 80a. 250b, 203b 24-7, d. Simplicius, *Commentary on Aristotle's Physics*, 80b. 1121.5, c. Philoponus, *Commentary Aristotle's Physics*, 405.23-7



paint a picture of a stable, teleological universe, Plato constructs a cosmology that flips many aspects of Democritus' cosmology on their heads.

Plato's depiction of Earth as the only abode for life represents one of the most important differences. Timaeus says,

Have we been correct in speaking of *one* universe, or would it have been more correct to say that there are many, in fact infinitely many universes. There is but one universe, if it is to have been crafted after its model. For that which contains all of the intelligible living things couldn't even be one of a pair, since that would require there to be yet another Living Thing, the one that contained those two, of which they then would be parts, and then it would be more correct to speak of our universe as made in the likeness, now not of those two, but of that other, the one that contains them. So, in order that this living thing should be like the complete Living Thing in respect of uniqueness, the Maker made neither two, nor yet an infinite number of worlds. On the contrary, our universe came to be as the one and only thing of its kind, is so now and will continue to be so in the future.<sup>146</sup>

Timaeus indicates that for our universe to represent a complete unit it must exist in a solitary state. If the universe did not exist as a complete unit it would not represent a model of the "Maker," what Plato also refers to as the "Living Thing." Whether or not Plato refers to a literal God or metaphor for the good is not important to his rhetorical

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<sup>146</sup> Plato, "Timaeus," 31 a,b.

deployment of the cosmology. The Maker represents perfection; the universe exists in the maker's image by virtue of its unitary nature. Like the orderly movement of the celestial objects, the unity of worlds represents another example of how study of the universe points to the way absolute values are embedded in the structure of the cosmos.

If the world did not exist as unity, it could not represent a model of the Good, either literally or metaphorically compared to God. Then it could not serve as empirical proof of Plato's philosophy.

Plato returns to this point several times throughout the dialogue.<sup>147</sup> He specifically attacks the atomist's position of infinite worlds. Timaeus argues those who ponder the question of infinite worlds are, "'unfinished' in things he ought to be 'finished' in."<sup>148</sup> This statement implies that the fact that the atomists even raise the possibility suggests a personal failing. Plato even ends the dialogue with Timaeus reiterating the idea,

And so now we may say that our account of the universe has reached its conclusion. This world of ours has received and teems with living perceptible god, image of the intelligible Living Thing, its grandness, goodness, beauty and perfection are unexcelled. Our one universe, indeed the only one of its kind, has come to be.<sup>149</sup>

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<sup>147</sup> Ibid., 33a, 55d, 92c.

<sup>148</sup> Ibid., 55c-d.

<sup>149</sup> Ibid., 92c.

Plato not only closes on an antipluralist note, but also specifically connects this idea to “grandness, goodness, beauty and perfection.”

For Plato a singular inhabited world represents a complete unit, which allows the Earth access to perfection. The existence of other universes would reflect a lack within our own universe and open the possibility for radically different ways of living that could conflict with Plato’s own recommendations. The singularity of the world also becomes important in relation to other elements of Plato’s cosmology.

For example, Plato places the Earth at the center of the cosmos and associates this centrality with the value of moderation.<sup>150</sup> This move mirrors almost all religious cosmologies (though not all of the Greek materialist cosmologies).<sup>151</sup> Physical centrality implies importance and value. Protagoras argues that morality exists as an arbitrary human creation, but earth’s centrality implies an empirical proof of humanity’s connection to a real and nonarbitrary perfection.<sup>152</sup> Of course this physical centrality also overlaps with the question of plurality of worlds. The existence of other universes would do even more to undermine Earth’s claim to physical centrality than the lack of physical centrality in the solar system.

An expansion of the natural orderly orbit of celestial objects represents the final crucial component of Plato’s cosmology for the purpose of ethics. As previously discussed, when Plato references the importance of an empirical approach to cosmology in order to elucidate appropriate moral conduct, he specifically discusses the orderly movement of celestial objects. Elsewhere in the dialogue, Plato argues

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<sup>150</sup> Ibid., 62d.

<sup>151</sup> Mircea Eliade, *The Sacred and the Profane: The Nature of Religion* (New York: Harcourt, 1959), 36-47.

<sup>152</sup> Ibid.

these objects serve as a guide for behavior, because they more closely comprise “being” rather than “becoming.” Plato describes the difference between being and becoming,

As I see it, then, we must begin by making the following distinction: What is that which always is and has no becoming, and what is that which becomes but never is? The former is grasped by understanding, which involves a reasoned account. It is unchanging. The later is grasped by opinion, which involves unreasoning sense perception. It comes to be and passes away, but never really is. Now everything that comes to be must of necessity come to be by the agency of some cause, for it is impossible for anything to come to be without a cause. So whenever the craftsman looks at what is always changeless and, using a thing of that kind as his model, reproduces its form and character, then of necessity, all that he so completes is beautiful. But were he to look at a thing that has come to be and use as his model something that has been begotten, his work will lack beauty.<sup>153</sup>

For Plato, “being” represents perfection; in contrast our world exists in a state of becoming having been created by the Maker. The stars and other celestial objects only move in one direction and thus represent physical objects that come close to the state of being (stability and permanence) and can serve as a model for human behavior.<sup>154</sup>

This provides more philosophical justification for Plato’s believe that the orderly

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<sup>153</sup> Plato, "Timaeus," 27d-28b.

<sup>154</sup> Ibid., 40b.

orbits of celestial objects represent a model for how to live. Just as when the craftsman “looks at what is always changeless” all it produces is “beautiful,” humans that model being will live just lives.

Plato’s cosmology could not allow for celestial objects to be inhabited, precisely because they are supposed to serve as exemplars for humanity. Being represents stability and permanence; Plato depicts the earth and its inhabitants as chaotic and ephemeral. If the celestial objects had mortal creatures as well, it would undermine the distinction between being and becoming. This distinction represents Plato’s justification for using the celestial objects as a moral reference point.

Earth’s singularity and centrality and the orderly orbits of celestial objects represent the empirical proofs for Plato’s ethics. In the *Laws* Plato brings his arguments full circle and uses his cosmology to provide a justification for the kind of religious (myths) beliefs that he had proposed before turning to cosmology. As if footnoting the *Timaeus*, the Athenian stranger in the *Laws* says, “reason is the supreme power among the heavenly bodies.”<sup>155</sup> He invokes orderly orbits to argue against atheism and for a universal notion of justice.<sup>156</sup> Unlike in previous dialogues, however, when Plato defends his new mythology, he can have characters reference the scientific basis that he established in the *Timaeus*.

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<sup>155</sup> Plato, “Laws,” 967e.

<sup>156</sup> Ibid., 886a, 89b, 97a-98c.

## 2.5 PLATO'S COSMOLOGY: MYTH OR SCIENCE?

Timaeus claims that empirical examination of the heavens provides the best method to live a good life.<sup>157</sup> Many scholars believe his discussion of the value of empirical observation of the heavens and many of the other elements of the *Timaeus* indicate Plato means for readers to take his cosmology literally.<sup>158</sup> On the opposite end of the spectrum, academics assert that Plato never intended his cosmology to be understood as anything more than a mythic allegory for his political philosophy.<sup>159</sup> For these individuals the *Timaeus* contains no more claims to truth than Plato's Atlantis myth. Some aspects of the *Timaeus* make this an attractive interpretation like the presence of the demiurge, a God-like entity. The intractability of the question has caused some scholars to take a hybrid approach, treating some elements as literal and others, like the demiurge, as metaphorical.<sup>160</sup>

The nature of the debate over the truth-value of the *Timaeus* makes it irresolvable, because it hinges on Plato's intent, which will always remain elusive. Given that Plato advocated advancing as truth myths that he did not believe, in order to forward his ethical program, one wonders what difference it makes whether Plato believed his cosmology as myth or fact. In *Sophist* Plato challenges the distinction between myth and scientific cosmology,

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<sup>157</sup> Plato, "Timaeus," 47a-c.

<sup>158</sup> Vlastos, *Plato's Universe*, 30-65; Richard Sorabji, *Time Creation and the Continuum* (Ithaca, N.Y.: Cornell University, 1983), 272-75; R. Hackforth, "Plato's Cosmogony," *Classical Quarterly* 27 (1959); Cornford, *Plato's Cosmology*, 29; Johansen, *Plato's Natural Philosophy: A Study of the Timaeus-Critias*, 52-53; Andrew Gregory, *Plato's Philosophy of Science* (London: Duckworth, 2000), 8-10.

<sup>159</sup> Taylor, *Commentary on Plato's Timaeus*, 66-70; Harold F. Cherniss, *Aristotle's Criticism of Plato and the Academy* (New York: Russell & Russell, 1962), 392-457; Wright, *Cosmology in Antiquity*, 175-78.

<sup>160</sup> Carone, *Plato's Cosmology*.

[The presocratic cosmologists] each appear to me to tell us a myth, as if we were children. One tells us that there are three beings, and that sometimes they're somehow at war with each other, while at other times they become friendly, marry, give birth, and bring up their offspring. Another one says that there are two beings, wet and dry or hot and cold. He marries them off and makes them set up house together. And our Eleatic tribe, starting from Xenophanes and even people before him, tell us their myth on the assumption that what they call "all things" are just one. Later on, some Ionian and Sicilian muses both had the idea that it was safer to weave the two views together. They say *that which is* is both many and one, and is bound by both hatred and friendship. According to the terser of these muses, in being taken apart they're brought together. The more relaxed muses, though, allow things to be free from that condition sometimes. They say that all that there is alternates, and that sometimes it's one and friendly under Aphrodite's influence, but at other times it's many and at war with itself because of some kind of strife. It's hard to say whether any of one these thinkers has told us the truth or not, and it wouldn't be appropriate for us to be critical of such renowned and venerable men.<sup>161</sup>

For Plato, despite the scientific pretensions of "renowned and venerable men," one cannot tell whether they have "told us the truth" and more than "myth." What is

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<sup>161</sup> Plato, "Sophist," in *Plato: Complete Works*, ed. John M. Cooper, trans., Nicholas P. White (Indianapolis: Hackett, 1997), 242c-43a.

known for sure is that many of Plato's contemporaries, including Aristotle, read the *Timaeus* literally (although others did not).<sup>162</sup>

Scholars have noted that Plato imitates the style of the presocratic cosmologists and goes so far as to incorporate elements of their philosophies. His mathematical descriptions of the universe reference late Pythagorean thought.<sup>163</sup> The use of the four elements owes a debt to Empedocles.<sup>164</sup> Plato's articulation of the four elements as the imperceptibly small building blocks of matters sounds very similar to Democritus' atomism.<sup>165</sup> Whether or not Plato meant *Timaeus*' cosmology as a myth, he clearly uses the dialogue to comment on many of the prominent cosmologies of the time.

Taylor goes so far as to suggest that Plato simply merged the cosmologies of Empedocles ("the most promising line in fifth-century science") and Pythagoras ("the one most directly connected with his own developments") making the *Timaeus* a record of presocratic thought, rather than Plato's own ideas.<sup>166</sup> Even though this interpretation has gained little traction in the academy, it does highlight the degree to which Plato's dialogue reads as a scientific text quite unlike anything he had yet produced.

The presocratics meant their cosmologies to be taken seriously. The adaption of the presocratic style could easily have led readers to also take Plato's cosmology

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<sup>162</sup> Cornford, *Plato's Cosmology*, viii-ix; Zeyl, *Timaeus*, xxi.

<sup>163</sup> Charles H. Kahn, *Pythagoras and the Pythagoreans: a brief history* (Indianapolis: Hackett, 2001), 56.

<sup>164</sup> Edward Hussey, *The Presocratics* (New York: Scribner, 1995), 130; Wright, *Cosmology in Antiquity*, 53, 100.

<sup>165</sup> Cornford, *Plato's Cosmology*, 210; Vlastos, *Plato's Universe*, 66, 67.

<sup>166</sup> Taylor, *Commentary on Plato's Timaeus*, 18-19. Cornford writes a detailed response to this theory Cornford, *Plato's Cosmology*, v-x.



seriously. Even if Plato meant the dialogue as a myth, it co-opts the prestige of materialist epistemology and uses it to advance his ethical interests.

Taylor suggests Plato simply retells previously existing cosmologies, but when one examines the *Timaeus* one can easily find examples of places that Plato tweaks existing science in order to better uphold his ethical vision. The Pythagorians had a unified system based on their understanding of mathematic principles. Plato simply picks and chooses elements of the Pythagorean cosmology without recognition of this fact. For example, Plato omits the existence of the counter-earth. The Pythagorians believed that numerical ratios played an important role in the cosmos and thus believed that there would need to be ten celestial objects. As Aristotle explains,

The Pythagoreans, as they were called, devoted themselves to mathematics; they were the first to advance this science, and having been brought up in it they thought its principles were the principles of all things. Since of these principles numbers are by nature the first, and in numbers they seemed to see many resemblances to the things that exist and come into being—more than in fire and earth and water... since, again, they saw that the attributes and the ratios of the musical scales were expressible in numbers; since then, all other things seemed in their whole nature to be modeled after numbers... and the whole heaven to be a musical scale and number. E.G. as the number 10 is thought to be perfect and to comprise the whole nature of numbers, they say

that the bodies which move through the heavens are ten, but as the visible bodies are only nine, to meet this they invent a tenth—the ‘counter-earth’.<sup>167</sup>

The Pythagoreans included the counter earth in order to balance out the presence of the Earth and thus give symmetry to cosmic system.<sup>168</sup> The Pythagorean’s hypothesized that the counter-earth would be Earth’s exact its opposite.<sup>169</sup>

The idea of a planet where things operated opposite of Earth would not fit Plato’s ethical vision of the cosmos, because he sought to make the motions of the heavens a model for human behavior. For Plato, the existence of a planet with the opposite motions from Earth would mean that the ethics of that planet would be greatly out of order. Instead, Plato simply omits mention of the counter-earth.

Another conflict with the Pythagoreans emerges over the order of the celestial objects. The Pythagoreans place the sun, not the Earth, at the center of the cosmos. Plato, like Anaximander, places the Earth at the center.<sup>170</sup> This can again be attributed to Plato’s ethical beliefs. The earth takes its place at the center of the cosmos, because it needs to be distinguished from the celestial objects that are meant to be models for humanity. If the earth moved as well, nothing would separate it from the celestial

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<sup>167</sup> Aristotle, "Metaphysics," in *The works of Aristotle*, trans., William David Ross and John Alexander Smith (Oxford: Clarendon Press, 1908), 985b-86a

<sup>168</sup> Burkert suggests that the Pythagorean reliance on numbers as a scientific foundation represents nothing more than mysticism. Walter Burkert, *Lore and Science in ancient Pythagoreanism*, trans. E. L. Minar (Cambridge: Harvard University Press, 1972), 240, 67, 337-50. Many other scholars, however, point out that Philolaus and other later Pythagoreans approach numbers in a scientific rather than religious manner. Guthrie, *A History of Greek Philosophy*, 326; Huffman, "Early Greek Philosophy," 83; Warren, *Presocratics*, 175-77.

<sup>169</sup> Carl Huffman, "Pythagoras," *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/pythagoras/#WasPytMatCos>.

<sup>170</sup> Aristotle, *On the Heavens*, trans. Stuart Leggatt (Warminster England: Aris & Phillips, 1995), 295b10; G. S. Kirk and J. E. Raven, *The Presocratic Philosophers: A Critical History with Selection of Texts* (London: Cambridge, 1971), KR 125, 26.

objects. The idea of centrality also bolsters the notion that humanity reflects the image of God, since humanity exists as a focal point for the rest of creation.<sup>171</sup>

Along similar lines, the Pythagoreans discovered the existence of wandering celestial objects without a fixed orbit.<sup>172</sup> Plato explicitly denies the possibility of disorderly celestial objects, because they would undermine his belief that cosmic objects serve as moral compasses. This represents Plato's gravest scientific alteration, because the wandering planets had been discovered in precisely the empirical fashion that Timaeus recommends early in the dialogue. It is these wandering planets that turn Plato away from cosmology in his earlier dialogues.

Plato also alters the cosmologies of Empedocles and the atomists to fit his ethical program. He replaces the randomly moving atoms of Democritus with more structured elements. Empedocles believed that love and strife acted as two opposing forces driving cosmic events.<sup>173</sup> Love creates unity, whereas strife results in chaos and fracture. Empedocles' cosmos lacked the orderly motion that Plato ascribes to his universe, because of the presence of strife. These alterations serve a similar function to his revisions of Pythagorean thought. Chaotic atoms and celestial objects call into question the possibility of individuals looking to astronomy as a model for ethical behavior.

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<sup>171</sup> The Pythagoreans Philolaus speculates that the moon may have inhabitants (A20). Huffman, "Early Greek Philosophy," 83; *ibid.* It is likely that Plato does not allow for the possibility for the same reasons he rejects the counter earth or a nongeocentric universe.

<sup>172</sup> Vlastos, *Plato's Universe*, 46 note 65.

<sup>173</sup> Hussey, *The Presocratics*, 131, 32. Fragment 418 Kirk Raven they cite as (Fr. 17 1.6, Simplicius Phys. 158, 6)

## 2.6 PLATO'S RHETORICAL COSMOLOGY

The evidence indicates that Plato changes his mind on cosmology between his middle and early dialogues, i.e., the *Phaedo* and *Republic*, and the later dialogues. Carone believes that Plato's opinion changes because he saw cosmology as a potential middle ground between the open approach to philosophy of the early dialogues and the elitism of the later dialogues.<sup>174</sup> For Carone, if cosmology provides a window into the Good then it would be accessible to anyone living in any society. All one had to do to learn about the Good was look up and watch the motion of the celestial objects. This was a large departure for Plato from the middle dialogues, even if he still believed the highest parts of philosophy, knowledge of the forms, was only accessible to the elite.<sup>175</sup> The trouble with Carone's analysis is that it does not offer a justification for why Plato would revisit cosmology or why Plato would restrict his philosophy to elites in his middle dialogues and then reopen his philosophy to everyone in his later dialogues.

Rather than see Plato's embrace of cosmology as a redemocratization of his philosophy, it seems more likely that he viewed cosmology as just another strategy to get people to live good lives. The cosmological turn in Plato's thought can be read as a rhetorical adjustment to the audiences he was trying to persuade to accept his philosophy. Remember that the first positive reference to cosmology occurs in the *Gorgias* when Socrates is trying to persuade Callicles to lead an ethical life. In this

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<sup>174</sup> Carone, *Plato's Cosmology*, 190.

<sup>175</sup> *Ibid.*, 117-18.

dialogue Socrates deploys cosmology in the same manner as his myth about souls being judged, as metaphysical reasons to be good. This demonstrates that one can use cosmology to advance the Good. Plato has Socrates admit as much in the *Phaedo*, when he initially approaches cosmology with the hope that it will compliment his philosophy. By the time Plato writes his later dialogues, cosmology as a tool for the Good looks better than the alternatives.

In contrast to myth and religion, cosmology had much more currency in the era, because unlike religion, cosmology was based in empirical verifiable reality (or at least conformed to the scientific method). In the *Republic*, Plato says that children could be indoctrinated with new myths to create a societal change for the better, a strategy whose shortcomings have already been discussed.<sup>176</sup> In the *Sophist*, Plato says that in the face of the scientific cosmology of the presocratics, adults are like children listening to myths.<sup>177</sup> Scientific cosmology allowed Plato to deploy myth while overcoming problems of growing materialism and the body of contradictory religious myths. The popularity of the works of the presocratic philosophers served as testament to the power of cosmology. The problem for Plato was that all of the previous cosmologies had been far too materialist to be useful in advancing his arguments. Plato's solution: invent a new cosmology.

The way that Plato describes cosmology in his later dialogues provides further evidence that he seeks to do with it, what he failed to achieve with mythology. In the *Republic*, Plato sought to use myths to control the population so he banished the poets, who provided a set of myths counter to Plato's ideals. In the later dialogues Plato has

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<sup>176</sup> Plato, *Republic*, 377c.

<sup>177</sup> Plato, "Sophist," 242c-43a.

largely abandoned his critique of the poets. In the *Laws* he turns his ire to atheists, but from Plato's description it is clear that he means rival cosmologists,

They maintain that fire and water and earth and air all owe their existence to nature and chance, and in no cases to art, and that it is by means of these entirely inanimate substances that the secondary physical bodies – the earth, sun, moon, and stars – have been produced. These substances moved at random, each impelled by virtue of its own inherent properties, which depended on various suitable amalgamations of hot and cold, dry and wet, soft and hard, and all other haphazard combinations that inevitably resulted when the opposites were mixed. This is the process to which all the heavens and everything that is in them owe their birth, and the consequent establishment of the four seasons led to the appearance of all plants and living creatures. The cause of all this, they say, was neither intelligent planning, nor a deity, nor art, but—as we've explained—nature and chance.<sup>178</sup>

Vlastos argues that this philosophical preamble in the *Laws X* singles out materialist cosmologies as the greatest threat to Plato's ideal society. The indictment was so sweeping that even Heraclitus and Diogenes of Apollonia, who believed in an intelligence that provides a foundation to the cosmos, were not excluded.<sup>179</sup> The punishments were also far graver than banishment for poets who told problematic myths in the *Republic*. The most lenient of the penalties Plato suggests is five years in

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<sup>178</sup> Plato, "Laws," X 889 b,c

<sup>179</sup> Vlastos, *Plato's Universe*, 23, 24.

solitary confinement for reeducation. Atheists (cosmologists) that did not repent their ideas or that proved particularly outspoken were to be put to death.<sup>180</sup> Plato's call to punish rival cosmologists makes him, "the first political thinker to propose that errors of opinion be made crimes punishable by law."<sup>181</sup> Not only was Plato the first to do this, but also the law was "without parallel in any surviving code of ancient Greece."<sup>182</sup>

Further evidence that Plato shifted his concern from poets to cosmologists is his opposition to the atomists. Diogenes Laertius writes that Plato sought to collect as many of Democritus' works as he could to burn them, but was stopped by some Pythagoreans who convinced him that the books were already too widely dispersed.<sup>183</sup> Obviously, if this were true it would suggest that Plato had a deep disregard for Democritus. Chitwood suggests that the story of a philosopher wanting to burn another philosopher's books existed as a trope in philosophical history and thus can be written off as mere exaggeration.<sup>184</sup> This may be true in other cases, but there exists evidence that Plato would be more receptive to censorship than the other philosophers Chitwood cites. Remember, Plato explicitly condones the destruction of books with messages that would mislead the people in the *Republic* and advocates the death penalty for atheists in the *Laws*.<sup>185</sup> Democritus' works taught atheistic messages that Plato would

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<sup>180</sup> Plato, "Laws," X 908e.

<sup>181</sup> Glenn Raymond Morrow, *Plato's Cretan City: A Historical Interpretation of the Laws* (Princeton: Princeton University Press, 1993), 488.

<sup>182</sup> Vlastos, *Plato's Universe*, 23.

<sup>183</sup> Diogenes Laertius, "The Lives of Eminent Philosophers," ed. Robert Drew Hicks (Cambridge, Mass.: Harvard University Press, 1925), Book IX.

<sup>184</sup> Ava Chitwood, *Death by Philosophy: The Biographical Tradition in the Life and Death of the Archaic Philosophers Empedocles, Heraclitus, and Democritus* (Ann Arbor: University of Michigan Press, 2004), 100.

<sup>185</sup> Morrow, *Plato's Cretan City*, 488.

have not wanted in his ideal Republic. Chitwood believes that Diogenes Laertius added the story about Plato wanting to burn Democritus' books in order to spice up history, yet Plato makes much more outrageous claims in his dialogues. The other examples of historians saying philosophers wanted to burn each other books lack evidentiary support in the writings of the philosophers in question.<sup>186</sup>

Even if Plato never desired to burn all of Democritus' books, Diogenes Laertius' story still likely reflects some element of truth. While Diogenes invented stories about philosophers, these stories typically reflect a facet of reality. The fact that Laertius, of all the historical figures that Plato disagreed with (and there were many), would write that Plato wanted to burn Democritus' works, suggests that for Plato atomism was even more dangerous than, for example, the sophists.

The other argument that suggests Plato despised the atomists is that he never directly referenced them in his work, something that has surprised both ancient and modern commentators.<sup>187</sup> While Plato does not mention every major thinker of the time he certainly mentions quite a few. Riginos suggests that the absence of Democritus from Plato's dialogues is, "not in itself surprising, considering the different interests of the philosophers."<sup>188</sup> Riginos' argument does not cohere with the historical evidence. Democritus argued there was nothing at all special about humanity's creation and some of the existent fragments of Democritus' work suggest that he viewed humans as a more advanced animal, not a creature created in the image

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<sup>186</sup> For example, the ancient biographers claimed Aristotle wanted to burn Plato's dialogues and Protagoras wanted to burn Plato's and Democritus' books. Chitwood, *Death by Philosophy*, 101.

<sup>187</sup> Laertius, "The Lives of Eminent Philosophers," Books III, XIX

<sup>188</sup> Alice Swift Riginos, *Platonica: The Anecdotes Concerning the Life and Writings of Plato* (Leiden: E. J. Brill, 1976), 167.



of God.<sup>189</sup> Evidence suggests Democritus openly argued his theory meant the soul could not be immortal and that he mocked the idea of an afterlife.<sup>190</sup> In the *Phaedo*, Plato attacks Anaxagoras' cosmology, which seems much more compatible with the traditional conceptions of religion than the atomist's explicitly atheistic cosmology.<sup>191</sup> At the very least Plato borrows heavily from the atomist cosmology when he writes about the foundational elements in the *Timaeus*. Riginos' argument ignores the many intersections between Democritus and Plato.

The fact that Plato's concern has shifted from the poets to rival cosmologists suggests that cosmology and not religion represents the new method Plato seeks to use to control the population. When Plato sought to use religion to persuade people to live a good life, he banished rival religions; now that he seeks to use cosmology he banishes rival cosmologies. This does not necessarily mean that Plato believed his cosmology was true. Remember in the *Republic* Plato advocates suppression of problematic myths even if they are true and the propagation of socially helpful myths even if they are false.

Whether or not Plato initially meant the *Timaeus* to be read scientifically is not particularly relevant to his rhetorical deployment of the Unity cosmology. All of the authors who suggest that Plato did not present the *Timaeus* as scientific truth rely primarily on close textual analysis with little historical contextualization. Historical records and other artifacts suggest that many of Plato's contemporaries read the

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<sup>189</sup> Furley, *The Greek Cosmologists*, 157.

<sup>190</sup> Ibid., 156.

<sup>191</sup> Plato, "Phaedo," 97c -99d.

document as science, which implies that Plato later represented the dialogue as true.<sup>192</sup> Plato references the cosmological elements from the *Timaeus* in the *Laws*, which indicates that by that time he meant his cosmology to be taken seriously.<sup>193</sup> The most compelling argument that Plato sought to present his cosmology rhetorically as truth is that he instructed his students at the Academy to begin building astronomical models of an orderly universe.<sup>194</sup>

This last point holds enormous importance for understanding how Plato sought to deploy his cosmology. Scholars who treat the *Timaeus* as only an allegorical story fail to account for the fact that Plato actually tried to produce empirical evidence for his claims. This evidence could serve as scientific proof for his ethical claims in debates against relativists. In fact as previously discussed, Plato makes this move explicitly in the *Laws*. Of course, knowing that Plato subordinates all other concerns to his desire create an ethical society, one should be skeptical that Plato would accept evidence that disproved his cosmology as a reason not to act ethically. After all, he considered irregular orbits a reason to disregard the whole discipline of cosmology.

## 2.7 CONCLUSION

Given the passage of time, it is difficult to measure the effectiveness of Plato's cosmological argument, but several arguments suggest that it proved lastingly

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<sup>192</sup> Cornford, *Plato's Cosmology*, viii-ix.

<sup>193</sup> Plato, "Timaeus," 43d-44c, 47b-c; Plato, "Laws," 966e-68a.

<sup>194</sup> Simplicius, *On Aristotle's "On the Heavens 2.10-14"*, trans. Ian Mueller (Ithaca: Cornell University Press, 2005), 488.22-4. Wright argues that the evidence means that we should believe the historical accuracy of Simplicius' account. Wright, *Cosmology in Antiquity*, 146.

successful. The first argument in favor of this thesis is Plato's shift to the cosmological argument in his later dialogues. Zeyl makes the argument that the cosmological account in the *Timaeus* was probably only a "prelude," to the story of the Atlantean's defeat by ancient Greece.<sup>195</sup> Plato never finished the Atlantean trilogy, a myth in the more traditional sense, and instead wrote the *Laws*. It very well may be that Plato abandoned the unfinished *Critias* (the second dialogue in the trilogy) and never began the third dialogue of the trilogy, because his cosmology proved more effective than his more traditional myth of Atlantis. This would suggest that Plato believed his cosmological arguments proved more effective than traditional myths.

The adoption of a Platonic cosmology by many important Athenians represents the second argument in favor of the cosmology's rhetorical success. Aristotle, one of the most influential Greek thinkers of the time, creates a cosmology based heavily on the *Timaeus* model.<sup>196</sup> The Stoics, a sect of Greek philosophical thought, also built a cosmological model influenced heavily by the *Timaeus*.<sup>197</sup> The next chapters will demonstrate that the rhetorical power of Plato's unity cosmology extends way beyond ancient Greece.

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<sup>195</sup> Zeyl, *Timaeus*, xvii-xviii.

<sup>196</sup> Johansen, *Plato's Natural Philosophy: A Study of the Timaeus-Critias*, 5.

<sup>197</sup> Paul Scade, "Stoic Cosmological Limits and their Platonic Background," in *Aristotle and the Stoics Reading Plato*, ed. V. Harte, et al. (London: British Institute of Classical Studies, 2011), 161-70; Gretchen J. Reydams-Schils, *Demiurge and Providence: Stoic and Platonist Readings of Plato's Timaeus* (Brepols: Turnhout, 1999).

### **3.0 THE DOMINANCE OF THE UNITY COSMOLOGY: UNITY FROM PLATO TO GALILEO**

Panhistoricism as a method will always force the difficult undertaking of choosing particular case studies to express the continuity of ideas throughout history.<sup>198</sup> This chapter faces the unenviable task of portraying the stability of an idea over the 2,000 years of history from Plato's academy to the aftermath of the Copernican revolution. Under these circumstances the chapter could not possibly do justice to the complexity and differences among opinions within the period. Instead, I will focus primarily on two case studies. The first examines Christianity's melding of Platonic mythology onto the cosmology of Aristotle. The second focuses on the way the Copernican revolution reignited the plurality debate and thus challenged the medieval values dependent on unity.

Like the other case studies I examine in-depth, both the reintroduction of the Platonic cosmology and the Copernican revolution represent areas of intellectual conflict. The Medieval period in between these events does not need as focused an examination precisely because Plato's ideas so dominated academic and church culture for centuries. Teasing out the rhetorical work of the unity cosmology during

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<sup>198</sup> Hawhee and Olson, "Pan-Historiography: The Challenges of Writing History across Time and Space," forthcoming in press, courtesy of the authors.

the intervening years would be exceedingly difficult because of its success. As E. M. W. Tillyard writes, “the conception of [cosmic] order is so taken for granted, so much part of the collective mind of the people, that it is hardly mentioned except in explicitly didactic writing.”<sup>199</sup> The unity of the world played a central role in anchoring this cosmic order and was largely taken for granted.

This chapter begins with an examination of Aristotle’s reworking of Plato’s cosmology. Aristotle’s scientific justification of unity ultimately had the greatest impact on Medieval Europe of any of the ancient cosmologies. Aristotle, however, decoupled many of the rhetorical elements of the *Timaeus* from his discussion of unity. If Aristotle’s *de Caelo* (350 B.C.E.), his primary work of cosmology, had entered Medieval thought unchanged, it could have spelled the end of the unity of the world rhetorical argument, despite Aristotle’s defense of unity as a fact.<sup>200</sup>

Before Aristotle’s ideas could become a part of Medieval European thought, however, they had to conform to Christian dogma. Inconsistencies between Aristotle’s cosmology and the Bible led to major conflicts between Averroists (followers of the Averroes) and Augustinian thinkers in the twelfth and thirteenth centuries. Thomas Aquinas played a pivotal role in mediating between the warring groups, by bringing Aristotelian science in line with Biblical teachings. He did this in part by rejoining the scientific defense of unity with the religious and philosophical implications for unity found in the *Timaeus*. Aquinas’ reformulated cosmology merged the scientism of

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<sup>199</sup> E. M. W. Tillyard, *The Elizabethan World Picture* (New York: Macmillan, 1944), 7.

<sup>200</sup> Aristotle’s *De Caelo* entered the Christian European world in a relatively complete form, through the Arab world in the twelfth and thirteenth centuries. I will engage a more detailed examination of its transmission, later in the chapter.

Aristotle with the philosophy of Plato and resulted in a system that proved remarkably stable for centuries.

Cosmology faded from the forefront into the background, but continued to play an enormous role in shaping political, religious, and philosophical possibilities. Shakespeare, Dante, and many other authors could make casual reference to the Aristotelian system, confident their audiences would get their references.<sup>201</sup> Monarchs justified their power on the basis of a celestial hierarchy grounded in Aristotelian physics.<sup>202</sup> They were not alone, the major social structures often appealed to cosmology to justify the maintenance of the status quo.<sup>203</sup>

The Copernican revolution shattered this stable *cosmos* and helped usher in an era of radical change. Most examinations of the effects of the cosmological upheaval focus predictably on the impact of heliocentrism. This chapter argues that heliocentrism represented such a threat to the established order not only because of its physical relocation of the earth, but also because it opened up the very real possibility of plurality. Plurality threatened one of the fundamental foundations of Plato's rhetorical unity cosmology. The transition in scientific thinking from plurality to unity reveals the rhetorical work that the unity cosmology had done in establishing the

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<sup>201</sup> Tillyard, *The Elizabethan World Picture*; C. S. Lewis, *The Discarded Image: An Introduction to Medieval and Renaissance Literature* (Cambridge: Cambridge University Press, 2002); Alison Cornish, "Dante's Moral Cosmology," in *Cosmology: Historical, Literary, Philosophical, Religious, and Scientific Perspective*, ed. Norriss S. Hetherington (New York: Garland Publishing, 1993).

<sup>202</sup> Joel R. Primack and Nancy Ellen Abrams, *The View from the Center of the Universe: Discovering our Extraordinary Place in the Cosmos* (New York: Riverhead Books, 2006), 69; Arthur O. Lovejoy, *The Great Chain of Being: A Study of the History of an Idea* (Cambridge: Harvard University Press, 1942).

<sup>203</sup> E. Edson and E. Savage-Smith, *Medieval Views of the Cosmos* (Oxford: Bodleian Library, 2004), 9-20; Toulmin, *Cosmopolis*; W. G. L. Randles, *The Unmaking of the Medieval Christian Cosmos, 1500-1760: From Solid Heavens to Boundless Aether* (Brookfield, VT: Ashgate, 1999), X-XI, 3; Norriss S. Hetherington, "Introduction: The Aristotelian World View," in *Cosmology: Historical, Literary, Philosophical, Religious, and Scientific Perspective*, ed. Norriss S. Hetherington (New York: Garland Publishing, 1993), 177.

framework for debates about religion, philosophy and politics. The dominant medieval European culture grounded so many of its social constructs in its cosmology that the Copernican revolution and attendant shift to plurality ushered in a social as well scientific revolution.

### 3.1 ARISTOTLE

Aristotle positioned himself as one of the primary heirs to Plato's cosmology. He studied at Plato's academy for twenty years, until Plato's death, earning his place as a top student.<sup>204</sup> While he borrowed from many of the cosmologies of the time, Plato influenced Aristotle's cosmology as much as any other thinker.<sup>205</sup> Like Plato, Aristotle believed in the ethereal nature of the celestial objects, geocentrism, orderly orbits, and unity.<sup>206</sup> Aristotle constructed his cosmology in the context of his broader physics, however, which resulted in important changes from the *Timaeus*.

Although Aristotle defended unity, he did not justify it on the ground that unity represented perfection. This broke with the *Timaeus*, where Plato argued unity's connection to perfection provided proof against plurality, because a perfect god would create a universe as close as possible to perfection. Dick argues that Aristotle probably avoided this argument, because it lacked scientific rigor.<sup>207</sup> Plato's argument depended on a perfect origin of the universe, the demiurge, and the intrinsic

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<sup>204</sup> Richard Mckeon, *The Basic Works of Aristotle* (New York: Random House, 1941), xiv.

<sup>205</sup> Johansen, *Plato's Natural Philosophy: A Study of the Timaeus-Critias*, 5.

<sup>206</sup> Aristotle, *On the Heavens*, 270b1-25, 76a18-79b1.

<sup>207</sup> Dick, *Plurality of Worlds*, 14.

connection of unity to perfection. Presupposing all of these factors and then using them to prove unity represented precisely the type of unscientific arguments that Aristotle sought to avoid.<sup>208</sup>

Aristotle defended unity on the basis of two primary arguments. The first relates to the way that Aristotle conceptualizes the nature of the basic units of matter. In the *Timaeus*, Plato identified four components of matter, earth, water, fire, and air.<sup>209</sup> As mentioned in the previous chapter, these “forms” functioned similarly to the atoms of Democritus, in the sense that they provided the foundational building blocks of everything on the planet. Aristotle built on Plato’s theory and assigned the various forms different locations to which they would naturally move. Fire, for example, would move away from our planet and earth would be drawn towards our planet.<sup>210</sup> Aristotle argued that multiple worlds could not exist, because the Earth of the other world would be drawn to the center of our world, or vice versa.<sup>211</sup> The inevitable collapse of one world into another ensures the impossibility of the plurality of worlds.

The second argument Aristotle makes against plurality relates to the nature of the prime mover. He theorized that since all action has a cause that the first cause must emerge from something special, the god-like prime mover. He believed that each world would have to have its own prime mover. He found this idea philosophically

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<sup>208</sup> Norriss S. Hetherington offers one interesting possible explanation of Aristotle’s move away from the cosmological argument for the good. He suggests that Plato had grown frustrated with the political process after his failure in Syracuse and thus turned to natural justifications of goodness. Aristotle had a completely opposite experience. He tutored Alexander the Great in the manner Plato recommended for a philosopher king and remained in his good graces throughout much of his life. Because of his success, he did not feel the need to make the move to cosmology as a justification for ethics that Plato made between the *Republic* and the *Timaeus*. Hetherington, “Aristotle’s Cosmology,” 97.

<sup>209</sup> Plato, *Timaeus*, 54a-62e.

<sup>210</sup> Aristotle, “Physics,” in *The Basic Works of Aristotle*, ed. Richard McKeon, trans., R. P. Hardie and R. K. Gaye (New York: Random House, 1941), 255b 13-30.

<sup>211</sup> Aristotle, *On the Heavens*, 276a18-79b1.



impossible to justify, making it another argument against plurality.<sup>212</sup> The need for a unitary prime mover bears some resemblance to Plato's belief that unity connects with perfection. Aristotle's unitary prime mover, however, has less clear implications for humanity. The unity of the world in Plato's *Timaeus* provided a celestial model for ethical living; the prime mover of Aristotle's *de Caelo* exists in the background as a physical necessity and without a clear connection to perfection.

Aristotle's scientific approach to cosmology stripped much of the philosophical undercurrent from Plato's *Timaeus*. Beyond the absence of the defense of unity based on perfection, Aristotle removes the cosmological discussion from Plato's context about living good lives. Many Platonists emphasized the mythic elements of the *Timaeus* and argued strenuously that one should not take it as a literal depiction of the universe.<sup>213</sup> Aristotle went in the other direction and viewed the mythic element as superfluous to the *Timaeus*' science.<sup>214</sup> Plato's rhetorical strategy depended on the intertwining of myth and science to accomplish what neither alone could. Both the neoplatonists and Aristotle threatened to undermine the strength of Plato's rhetorical

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<sup>212</sup> Aristotle, "Metaphysics," xii 1074a.

<sup>213</sup> John Dillon, "Timaeus in the Old Academy," in *Plato's Timaeus as Cultural Icon*, ed. Gretchen J. Reydam-Schils (Notre Dame, Indiana: University of Notre Dame Press, 2003), 80-81.

<sup>214</sup> This does not mean to imply that Aristotle had no interest in finding teleology in nature. In *Politics* for example he argues that plants existed for animals and "[nature] has made all animals for the sake of men."<sup>214</sup> Aristotle, "Politics," 1256b 20-23. This passage and others like it have led scholars to argue Aristotle has a human-centered teleology, although most scholars go only so far as to say he has a natural teleology. David Sedley, "Is Aristotle's Teleology Anthropocentric," *Pronesis* 36, no. 2 (1991); John Cooper, "Aristotle's Natural Teleology," in *Language and Logos: Studies in Ancient Greek Philosophy*, ed. Malcolm Schofield and Martha Nussbaum (Cambridge: Cambridge University, 1982). A good source that defends the mainstream view of teleology without anthropocentrism, Christopher Shields, "Aristotle," *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/aristotle/>. Whether or not Aristotle's teleology is anthropocentric it differs in important ways from Plato's. He disconnects teleology from cosmology preferring to find it in other examples, like the one above. Aristotle's teleology is also much less explicit and less directly connected to ethical living. Most importantly, as mentioned above, Aristotle does not connect earth's unity with teleology, morality, philosophy, politics, or religion.

cosmological argument by decoupling the science from the myth. Christian thinkers, however, would rejoin the two, by overlaying the mythic elements of the *Timaeus* onto Aristotle's new scientific justifications for unity.

### 3.2 EARLY CHRISTIANITY AND COSMOLOGY

Philo (20 BCE-40CE), a Hellenized Jew who greatly influential Christian thought, borrowed heavily from the *Timaeus*.<sup>215</sup> He repeats Plato's argument for the connection of unity to perfection as manifested in God: "The creator is one, and he, making his creation to resemble himself in its singleness, employed all existing essence in the creation of the universe. For it would not have been complete if it had not been made and composed of all parts which were likewise whole and complete."<sup>216</sup> As if to make clear definitively from where he borrows the idea, Philo writes, "some persons who believe that there are many worlds, and some who even fancy that they are boundless in extent, being themselves inexperienced and ignorant of the truth of those things of which it is desirable to have correct knowledge."<sup>217</sup> The language of the passage demonstrates that he references the *Timaeus* directly. Note the similarities between "ignorant of the truth of those things of which it is desirable to have correct

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<sup>215</sup> Jaroslav Pelikan, *What Has Athens to do with Jerusalem* (Ann Arbor: University of Michigan Press, 2000), 67-87.

<sup>216</sup> Philo, "De Opificio Mundi," in *The Works of Philo: Complete and Unabridged*, ed. C. D. Yonge, trans., C. D. Yonge (Peabody, MA: Henderickson, 2000), 171.

<sup>217</sup> Ibid.

knowledge” and Plato’s remark about believers of plurality that they are, “‘unfinished’ in things he ought to be ‘finished’ in.”<sup>218</sup>

Despite Philo’s embrace of the *Timaeus*, however, other Christians challenged the need to investigate the nature of the universe. Writing towards the end of the Roman Empire, St. Augustine gives a critique of the Greek cosmologists reminiscent of Plato’s early dialogues,

When, then, the question is asked what we are to believe in regard to religion, it is not necessary to probe into the nature of things, as was done by those whom the Greeks call *physici*, nor need we be in alarm lest the Christian should be ignorant of the force and number of the elements--the motion, and order, and eclipses of the heavenly bodies; the form of the heavens; the species and the natures of animals, plants, stones, fountains, rivers, mountains; about chronology and distances; the science of coming storms; and a thousand other things which those philosophers either have found out, or think they have found out...It is enough for the Christian to believe that the only cause of all created things whether heavenly or earthly, whether visible or invisible, is the goodness of the Creator, the one true God; and that nothing exists by Himself that does not derive its existence from Him.<sup>219</sup>

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<sup>218</sup> Plato, "Timaeus," 55c-d.

<sup>219</sup> Augustine and Thomas S. Hibbs, *Enchiridion on Faith, Hope, and Love*, trans. Thomas S. Hibbs (Washington, DC: Regnery, 2002), 9-10.

Augustine's mention of the "*physici*" refers to the Greek cosmologists. Augustine's statement downplays the importance of science to Christians, whom he believes are better served by focusing on their faith in God. Augustine himself still read the ancient Greek texts, but many of his contemporaries and successors expanded on his idea that a Christian need not take an empiricist approach to nature in order to advocate a hostile attitude to what we today would call scientific enterprises.<sup>220</sup>

Between the fall of Rome and the twelfth century, the *Timaeus*, the only of Plato's dialogues continuously available in Latin throughout western history provided the foundation of much of Europe's ancient knowledge.<sup>221</sup> Few of Aristotle's cosmological works or any of the other Greek cosmologists made their way into the hands of Christian scholars, which meant the *Timaeus* had little opposition.<sup>222</sup> Two major translations of the *Timaeus* circulated, one by Calcidicus and the other Cicero. Both translations excluded much of the dialogue that did not examine the structure of the universe, like the myth of Atlantis. This had the effect of making the translations purely cosmological works, which in turn dampened the opinion that Plato meant his account of the universe as a myth.<sup>223</sup>

Christian Platonists had another reason to take the cosmological account in the *Timaeus* as literal, rather than metaphorical, it harmonized with the creation account in *Genesis*. Most non-Christian Platonists, on the one hand, felt the need to read the

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<sup>220</sup> Thomas Kuhn, *The Copernican Revolution: Planetary Astronomy in the Development of Western Thought* (Cambridge, MA: Harvard University Press, 1970), 106.

<sup>221</sup> Anna Somfai, "The Eleventh-Century Shift in the Reception of Plato's "Timaeus" and Calcidius's "Commentary'," *Journal of the Warburg and Courtauld Institutes* 65 (2002): 1.

<sup>222</sup> This is not to say that other non-cosmological ancient did not circulate; for example Boethius translated Aristotle's *Logic*, and fragments came down through Plotinus and Proclus.

<sup>223</sup> Somfai, "The Eleventh-Century Shift in the Reception of Plato's "Timaeus" and Calcidius's "Commentary'," 4. According to Somfai's account of the fragments available of the *Timaeus*, the sections on unity discussed in the previous chapter were present.

*Timaeus* as a myth because they viewed the creation of the universe out of nonexistence as incompatible with science. The Christian Platonists, on the other hand, were looking for a scientific defense of this and other elements of the Biblical account of creation.<sup>224</sup> Despite the reservations of Augustine's followers and others, the *Timaeus* continued to inform the Christian cosmology.

In 1086, crusaders led by Alfonso VI, captured the Muslim city of Toledo. Scholars from all over Christendom came to read the ancient Greek texts that the Islamic scholars preserved.<sup>225</sup> The introduction of previously absent Greek texts and commentaries on those texts by Arab, Jewish, and Persian scholars, like al-Kindi, al-Farabi, Ibn Gabirol, Ibn Sina (Avicenna), and Ibn Rushd (Averroes), in the end of the twelfth century and the beginning of the thirteenth century helped usher in a scientific revolution.<sup>226</sup> The new influx of texts included much of Aristotle's work, *de Caelo* being one of the most influential.<sup>227</sup>

By the twelfth century, Aristotle's cosmology overtook Plato's *Timaeus* as the foundation for the scientific view of the universe held by the secular masters (the term for scientists at universities) and many of the Catholic orders.<sup>228</sup> Aristotle presented a more scientifically complete and integrated physics than found in the *Timaeus*, which made the previous attempts at natural philosophy grounded in Platonic thinking seem

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<sup>224</sup> Andrew Gregory, *Ancient Greek Cosmogony* (London: Duckworth, 2007), 150.

<sup>225</sup> Helen J. Nicholson, *The Crusades* (Westport, CT: Greenwood, 2004), 25-26.

<sup>226</sup> Étienne Gilson, *The Philosophy of St. Thomas Aquinas*, trans. Edward Bullough (Freeport, NY: Books for Libraries Press, 1971), 13; Ralph McInerny, *Aquinas* (Cambridge: Polity Press, 2004), 10; Edward Grant, *Planets, Stars, and Orbs: Medieval Cosmos, 1200-1687* (Cambridge: Cambridge University, 1994), 12-13; Richard E. Rubenstein, *Aristotle's Children: How Christians, Muslims, and Jews Rediscovered Ancient Wisdom and Illuminated the Dark Ages* (Orlando: Harcourt, 2003), 15-16.

<sup>227</sup> Grant, *Planets, Stars, and Orbs*, 14; Rubenstein, *Aristotle's Children*, 4-5.

<sup>228</sup> Edward Grant, "A New Look at Medieval Cosmology, 1200-1697," *Proceedings of the American Philosophical Society* 129, no. 4 (1985): 428, footnote 12.

haphazard.<sup>229</sup> Eventually, Aristotle's *de Caelo* would become the unquestioned cosmology until late in the seventeenth century, but first it faced a potentially devastating backlash from the Franciscan order and their allies.

Many secular masters, often referred to as Averroists after the famous Arab platonic scholar Averroes, believed that the physical laws of *de Caelo* and Aristotle's other works were absolute, which created two problems. First, there existed elements of Aristotle's science that conflicted with Christian teaching. Aristotle, for example, argued his physics meant that the world existed eternally.<sup>230</sup> The eternal nature of the world contradicted the description of creation found in *Genesis*. The second, more general problem was that very idea of restrictions on nature embedded in Aristotle's thinking, de facto placed restrictions on God's power. Aristotle's belief that the nature of the elements prevented the possibility of a plurality of worlds, for example, denied the omnipotence central to the Christian God. If God wanted plurality, according to the Christian logic, he must be able to have it.

In order to solve these contradictions, Latin Averroists, like John of Jandun, Taddeo of Parma, and Angelo of Arrezzo, for example, posited two truths: the philosophical truth that the universe has existed forever and the religious truth that God created the universe.<sup>231</sup> This angered the powerful Franciscan order of monks, led by general master Bonaventure. The Franciscans generally held an Augustinian

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<sup>229</sup> Gilson, *The Philosophy of St. Thomas Aquinas*, 13; Grant, "A New Look at Medieval Cosmology, 1200-1697," 438 footnote 12.

<sup>230</sup> Aristotle, *On the Heavens*, 279b4-83b17.

<sup>231</sup> McInerney, *Aquinas*, 20-21; John D. North, "One Truth or More? Demarcation in the Universe of Discourse," in *Physics, Cosmology and Astronomy, 1300-1700: Tension and Accommodation*, ed. Sabetai Unguru (Boston: Kluwer, 1991).

perspective on empiricism and viewed the double-truth belief as heresy.<sup>232</sup> The conflict between the two sides raged back and forth resulting in major events like British Cardinal Robert of Courçon's ban on Aristotelian physics in 1215.<sup>233</sup> Thomas Aquinas played a pivotal role in mediating between the opposed religious factions and creating a hybrid system that merged Christianity with Aristotelian physics. This merger set the stage for the reemergence of the Platonic unity argument in the Medieval period.

### 3.3 AQUINAS

Aquinas' background uniquely prepared him to offer a compromise between science and faith. From the ages of 5-14 he lived in a Benedictine environment where science, humanism, and religion coexisted harmoniously. He joined the Dominican order, notable for its commitment to teaching science, in 1243.<sup>234</sup> Albert Magnus, one of the first Europeans exposed to the full corpus of Aristotelian thought, became Thomas Aquinas' teacher. Aquinas rose through the ranks of the church as the unease began to grow among Franciscans and others, about the compatibility of Aristotle's ideas with Christianity.

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<sup>232</sup> Gilson, *The Philosophy of St. Thomas Aquinas*, 6; Dick, *Plurality of Worlds*, 26; McInerney, *Aquinas*, 20-21. The Franciscan disapproval of Aristotle was largely limited to his cosmology, they made use of his logic and ethics. Eugene Rathbone Fairweather, *A Scholastic Miscellany: Anselm to Ockham* (Philadelphia: Westminster Press, 1956), 365.

<sup>233</sup> Gilson, *The Philosophy of St. Thomas Aquinas*, 19. It is important to note that Cardinal Robert's edict still allowed for Aristotle's ethics and logic.

<sup>234</sup> *Ibid.*, 2-3.

Aquinas sought to steer a middle road between the secular and religious forces. He hoped to harmonize scientific thinking with Christianity and thus negate the forced choice between the two.<sup>235</sup> Aquinas' middle path meant finding ways that the purportedly contradictory elements of Aristotle and Christianity could be merged. Sometimes this meant discarding specific elements of Aristotelian thought. In *On the Eternity of the World*, for example, Aquinas produces a justification for maintaining Aristotle's ideas broadly, but rejects his claim that the universe has existed eternally.<sup>236</sup> At other times, Aquinas had to give religious justification to scientific "facts," providing answers to scriptural objections to scientific laws.

The question of the Earth's unity served as a major area of conflict between the Averroists and the Franciscans. Aristotle defended a unity cosmology on the basis of how the four elements work. Aristotle's elemental theory played a central role in his overall thought, which meant that jettisoning it would not be as easy as arguing that the world did not exist eternally. On the one hand, if the elemental justification of unity disappeared it would render large parts of Aristotle's physics incoherent. On the other hand, the belief that the elements placed an absolute limit on the number of worlds God could create denied God's omnipotence. Aquinas eventually drew on Plato's *Timaeus* to provide a solution to this problem, but, before he could, he had to come to terms with potential areas of disagreement between the *Timaeus* and the Bible.

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<sup>235</sup> Ibid., IX-X, 6, 18; Kuhn, *The Copernican Revolution*, 110-11; J. D. North, *Stars, Minds and Fate: Essays in Ancient and Medieval Cosmology* (London: Hambledon, 1989), 403; Aidan Nichols, *Discovering Aquinas: An Introduction to His Life, Work, and Influence* (Grand Rapids, MI.: William B. Eerdmans, 2003), 14; Grant, *Planets, Stars, and Orbs*, 53.

<sup>236</sup> Thomas Aquinas, "De Aeternitate Mundi," *Medieval Sourcebook*, <http://www.fordham.edu/halsall/basis/aquinas-eternity.asp#f2>.



In the *de Potentia* (1265-1266), Aquinas first addresses Plato's arguments about unity in the *Timaeus*, "According to Plato (*Tim.*) the best produces the best. Now the best can only be one. Since then God is best of all things, only one thing can be produced by him."<sup>237</sup> He has the above quote as a supporting argument for the negative case under the heading, "Can a Multitude of Things Proceed from One First Thing?"<sup>238</sup> Aquinas' specific reference of the *Timaeus* indicates that the "one" produced by God references the world or at least includes it in the category in question. Even though Aquinas supports unity as a fact of nature, he chooses not to limit God's power by claiming that God can only produce one.

Aquinas offers a definitive yes, to the question, "Can a Multitude of Things Proceed from One First Thing?" He says that arguments that limit God's ability to create plurality confuse the nature of cause and effect: "I answer that the impossibility of many things proceeding from one immediate and proper principle would seem to arise from the cause being determined to its effect, so that it would seem due and necessary that from such and such a cause such and such an effect should proceed."<sup>239</sup> While unity may relate to perfection it does not place a limit on the power of God to create imperfect worlds. In a specific response to his reading of Plato's *Timaeus* that supports the proposition that a multitude cannot emerge from unity, Aquinas writes, "The universe as created by God is the best possible in respect of the things that actually exist; but not in respect of the things that God is able to create."<sup>240</sup> This passage lacks clarity; one can read it to suggest that God could create a perfect

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<sup>237</sup> Aquinas, *Quaestiones Disputatae De Potentia Dei*, q. 3, a. 16, o. 17

<sup>238</sup> Ibid.

<sup>239</sup> Ibid., q. 2, a. 16, c.

<sup>240</sup> Ibid., q. 2, a. 16, ad 17.

plurality. This interpretation, however, does not comport with the rest of Aquinas' thinking on unity vs. plurality as will be shown below. Instead, this passage likely means only that God could create a plurality of worlds, not that God in fact did so. If God is omnipotent, he can do anything he wills.

Aquinas, thus, dispatches what he believes is Plato's argument for why a perfect god could only create a unity. In actuality, Aquinas either misreads or misrepresents Plato's initial position. Plato never indicates in the *Timaeus* that God must create a unity, but rather, "being free of jealousy, he wanted everything to become as much like himself as was possible."<sup>241</sup> The unity of the universe models the demiurge's own perfection, because of the desire of the demiurge, not a natural constraint. Aquinas ultimately turns to this justification of unity in place of the idea that Aristotelian physics limit out the possibility of plurality.

Aquinas could not deny God the ability to create a plurality of worlds, because the Christian God has omnipotent power. The actual existence of a plurality of worlds, however, would create a serious problem for the Aristotelian physics at the heart of twelfth-century science. Aquinas needed an explanation for the unity of the world that did not rely on physics. Aquinas makes the case for the existence of unity on Platonic grounds,

However, it should be realized that some prove the possibility of many worlds in other ways. In one way, as follows: The world was made by God; but the power of God, since it is infinite, is not limited to this world alone. Therefore it

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<sup>241</sup> Plato, *Timaeus*, 29e.

is not reasonable to say that He cannot make yet other worlds. To this it must be said that if God were to make other worlds, He would make them either like or unlike this world. If entirely alike, they would be in vain - and that conflicts with His wisdom. If unlike, none of them would comprehend in itself every nature of sensible body; consequently no one of them would be perfect, but one perfect world would result from all of them... it must be said that here it pertains to the goodness of the world to be one, because oneness possesses the aspect of goodness. For we see that through being divided some things lose their proper goodness.<sup>242</sup>

Aquinas indicates that God could have created a plurality of worlds, but he did not because plurality represents a less perfect universe.<sup>243</sup> Each world on its own would lack completeness and thus not reflect goodness. Aquinas jettisons what he suggests is Plato's mandatory connection of a perfect God and unity, but he maintains the belief that unity is the closest thing to perfection and thus the type of universe God did create.

Aquinas returns to the question of plurality in his masterpiece the *Summa Theologica*. In the style of scholastic writing, he begins with objections to the position he will ultimately take. He lists three arguments for plurality: God has the power to create plurality, because his power is unlimited; multiple worlds are better than a

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<sup>242</sup> Thomas Aquinas, *The Heavens*, trans. Fabian R. Larcher and Pierre H. Conway (Washington, D. C.: Priory of the Immaculate Conception), lec. 19, n. 197.

<sup>243</sup> This represents a likely motivation for God's action rather than a restraint, in contrast to individuals like Michael Scot, William of Auvergne and Roger Bacon, who argued that it was impossible for God to create plurality.

single world; and the form-matter distinction allows for multitudinous materializations of single forms.

This time he begins his defense of unity with a quote from the Bible, “It is said (John 1:10): ‘The world was made by Him,’ where the world is named as one, as if only one existed.”<sup>244</sup> At first it seems that the Biblical reference radically alters the nature of Aquinas’ argumentative strategy. Before he relied solely on philosophical justifications for unity, now he draws upon the ultimate authority of the time: the Bible. Dick and Crowe disagree with this reading, and argue instead that the briefness of argumentation from Biblical verses demonstrates Aquinas’ confidence with his philosophical arguments.<sup>245</sup> Another possible reading is that Aquinas’ is enacting his alternative to the double truth of the Averroeseans. He advocates faith and reason as intertwined so he provides the Biblical reference as well as the philosophical defense of his position. This format was in keeping with the broader scholastic writing style of which Aquinas was a part.<sup>246</sup>

After quoting the Bible, Aquinas provides a general response to the plurality argument before responding to three specific objections to unity. For his initial rejoinder he writes,

The very order of things created by God shows the unity of the world. For this world is called one by the unity of order, whereby some things are ordered to

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<sup>244</sup> Aquinas, *The Summa Theologica of St. Thomas Aquinas. Part I QQ. L.-LXXIV*, q. 47, a. 3, c.

<sup>245</sup> Dick, *Plurality of Worlds*, 27; Crowe, *Extraterrestrial Life Debate*, 7.

<sup>246</sup> It is also worth noting that the cosmological discussion occurs in the section of the *Summa Theologica* about “the distinction of things.” This suggests that Aquinas treats plurality as connected with the relationship between Platonic form and matter and the nominalist-realist controversy.

others. But whatever things come from God, have relation of order to each other, and to God Himself, as shown above (11, 3; 21, 1). Hence it must be that all things should belong to one world. Therefore those only can assert that many worlds exist who do not acknowledge any ordaining wisdom, but rather believe in chance, as Democritus, who said that this world, besides an infinite number of other worlds, was made from a casual concourse of atoms.<sup>247</sup>

Aquinas much more explicitly channels Plato's rhetorical cosmology in this paragraph. In his commentary on *de Caelo* he argued that a plurality of worlds would leave each individual world less than complete. Here he connects the unity of the world to God's inherent order, just as Plato's cosmos derived from its connection to being. Plurality does not only mean that our world lacks perfection, but denies the possibility of "any ordaining wisdom" and ushers in the materialism of Democritus. By pointing to divine sovereignty ("ordaining") and order ("wisdom") Aquinas presents a universe completely at odds with the anarchic and chaotic cosmology of the atomists.

The implication that a line of reasoning would lead to the cosmology of Democritus must have served as devastating indictment at the time Aquinas wrote this passage. The only ideas of Democritus available at the time were filtered through his rival Aristotle's cosmological criticisms, which also meant virtually none of his moral philosophy survived.<sup>248</sup> This positioned him perfectly to fill the role of atheistic

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<sup>247</sup> Aquinas, *The Summa Theologica of St. Thomas Aquinas. Part I QQ. L.-LXXIV*, q. 47, a. 3, c.

<sup>248</sup> Furley, *The Greek Cosmologists*, 115.

bogeyman in a time when religion reigned supreme.<sup>249</sup> Aquinas invocation of his name suggests that plurality ultimately culminates in rejection of God.

In responding to the three objections Aquinas lists to the unity position, he also explicitly invokes Plato's *Timaeus*. The first objection indicates that because God's power is infinite it would manifest itself in an infinite number (or at least a plurality) of worlds. In his response Aquinas references back to Plato's *Timaeus*,

This reason proves that the world is one because all things must be arranged in one order, and to one end. Therefore from the unity of order in things Aristotle infers (Metaph. xii, text 52) the unity of God governing all; and Plato (Tim.), from the unity of the exemplar, proves the unity of the world, as the thing designed.

This passage makes a very similar argument to his previous rebuttal, but the origin of Aquinas' argument becomes clear. The unity of God manifests itself in the unity of the world, even if God could have created a universe not modeled on its unity.<sup>250</sup>

For Aristotle, unity represented a necessary component of his physics, without which much of the rest of his corpus would not make sense. Other worlds called into question the tendency of elements to move towards their natural place. Plato and

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<sup>249</sup> The atomic theory fell by the wayside from the time of the ancients until the seventeenth century for precisely this reason. Dick, *Plurality of Worlds*, 21-23. The perceived connection between Democritus, and atheism and sophistry will be explored more in the fourth chapter.

<sup>250</sup> Interestingly, he also cites Aristotle making what Aquinas suggests is a similar claim. It is not clear what part of Book XII of Metaphysics Aquinas references, but it most likely is Aristotle's argument about how plurality would require multiple prime movers. As discussed before, Aristotle removed questions of the prime mover from the philosophical considerations Plato attributed to the demiurge. The unity of the prime mover occurred because of its logical necessity, not because of the "unity of order in things."

Aquinas placed the stakes much higher than coherent physics. Aquinas echoed Plato in his belief that the goodness of the universe represented the closest thing to absolute goodness outside of God,

But things participate in the divine goodness to the extent that they are good, by way of likeness. Now, that which is the greatest good in caused things is the good of the order of the universe; for it is most perfect, as the Philosopher says. With this, divine Scripture is also in agreement, for it is said in Genesis (1:31): “God saw all the things He had made, and they were very good,” while He simply said of the individual works, that “they were good.”<sup>251</sup>

A plurality of worlds would not elicit God’s claim of “very good,” because a plurality lacked perfection. The imperfection of the universe would implicate the access to perfection of all creatures. In the *Summa Theological*, Aquinas writes, “the principal good in things themselves is the perfection of the universe.”<sup>252</sup> The idea that the universe represents the foundation for goodness in “things themselves,” which includes humans, comes very close to the Platonic idea that humanity can look to the cosmos as a model for morality. Aquinas views the universe as the best thing by virtue of its unified nature. Individual works (or humans) can get access to this goodness, by operating in conjunction with the telos of the universe. Plurality

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<sup>251</sup> Thomas Aquinas, *Contra Gentiles Book Three: Providence (Q. 1-83)*, trans. Vernon J. Bourke (New York: Hanover House, 1956), III, C. 64, N. 9

<sup>252</sup> Ibid., III, c. 64, n. 9.

fragments the universe and destroys its unified purpose that directs humans to live good lives.

### 3.4 AQUINAS' LEGACY

In order to understand the impact of Aquinas' thinking on unity, one must first examine the success of his attempt to unify science and religion more generally. Etienne Gilson argues that clear-headed figures of the time realized Aristotle's system would inevitably win out because, "the strictly physical and natural part of the doctrine presented a system so incomparably superior to the fragmentary and little coherent solutions proposed by the older schoolmen."<sup>253</sup> Little doubt exists that Aristotle's ideas represent the better science, but Gilson may be engaging in too Whiggish a history. The Franciscans proved a formidable foe of Averroist ideas. In 1277, only three years after Aquinas' death, the Bishop of France condemned 219 Aristotelian ideas, many of which applied to Aquinas' thinking.<sup>254</sup> McNerny argues that if the, "spirit of the condemnations had prevailed, the university would have turned its back on the enormous philosophical achievements of Aristotle and even more seriously called into question the assumption that faith and reason are complementary."<sup>255</sup> Absent interventions like Aquinas', one can imagine a world where conservative Christianity halted medieval scientific advancement.

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<sup>253</sup> Gilson, *The Philosophy of St. Thomas Aquinas*, 16.

<sup>254</sup> McNerny, *Aquinas*, 21.

<sup>255</sup> Ibid.



Ultimately, Aquinas' ideas did get the upper hand. In response to the 1277 ban, the order of preachers made the study of Aquinas mandatory. He posthumously received the rare title of Doctor of the Church, an honorific given for contribution to Catholic theology. In 1323 the church canonized Aquinas and two years later the condemnation of his work was removed.<sup>256</sup> Aquinas' successful harmonization of science and religion allowed Aristotle's ideas to flourish. Aristotle's works became the foundation of the university system and were studied second only to the Bible.<sup>257</sup> Just about everyone who learned to read and write also learned the basics of Aristotle's cosmology.<sup>258</sup> Aristotle's authority became near absolute, with the claim of *ipse dixit* (he [Aristotle] said it himself) serving as a phrase capable of ending arguments.<sup>259</sup> Amazingly, Aristotle's ideas gained the allegiance of humanists, scientists, and devote Christians, even the Protestants maintained support for Aristotle's thinking after they split from the Catholic Church.<sup>260</sup>

Once established, the structure of knowledge production kept the Aristotelian paradigm relatively stable for centuries. Most scholars produced cosmological works in the style of commentaries. This technique for writing allowed individuals to disagree with Aristotle on particular points, but not create a coherent theory to replace

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<sup>256</sup> Ibid., 141, 42. The belief that God *could* create other worlds continued to dominate Catholic thinking, despite removing the condemnation of Aquinas' works. Protestants, however, never accepted this reasoning Martin Luther and Philip Melanchthon (a major protestant theologian), both claimed plurality was impossible. Dick, *Plurality of Worlds*, 88.

<sup>257</sup> Edward Grant, "Aristotelianism and the Longevity of the Medieval World View," *History of Science* 16 (1978): 94; Dick, *Plurality of Worlds*, 24-25.

<sup>258</sup> Grant, *Planets, Stars, and Orbs*, 59.

<sup>259</sup> Francisco José Ayala and Theodosius Grigorievich Dobz, eds., *Studies in the Philosophy of Biology: Reduction and Related Problems* (Berkeley: University of California, 1974), 6.

<sup>260</sup> Edward Grant, "In Defense of the Earth's Centrality and Immobility: Scholastic Reaction to Copernicanism in the Seventeenth Century," *Transactions of the American Philosophical Society* 74, no. 4 (1984): 4.

his. The commentary format made its authors responsive to Aristotle's specific claims, but did not provide much flexibility to develop broad theories to replace his. Nor did the authors of these commentaries cite one another. The kind of large theory building Summas, like the kind Aquinas wrote, fell out of fashion and, when they did emerge, they mimicked the style of the commentaries rather than staying true to the format of the older Summas.<sup>261</sup> The fact that commentary writers rarely cited each other's work proved another major impediment to the development of a new cosmology. Had the commentaries cited one another then the problems with Aristotelian physics would have been compiled in a cumulative way that better reflected the myriad of flaws within the system.<sup>262</sup> The writing style of the times resulted in lots of small debates about, for example, whether the celestial sphere existed as a fluid or series of solid masses or what caused an element to move from its natural place, but nothing that would challenge the core ideas of Aristotle.<sup>263</sup>

Unity served as one of the core ideas of Aristotle, which existed largely beyond reproach. Aquinas' return to Platonic justifications for unity, rather than reliance on Aristotle's physical laws, set the stage for this unquestioned acceptance. Debates did continue on how God could create a plurality of worlds, but these were motivated primarily by the decree of 1277 that made it an excommunicable offense to deny God's ability to create a plurality.<sup>264</sup> The omnipotent nature of God represented one of

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<sup>261</sup> Grant, "Aristotelianism and the Longevity of the Medieval World View," 98-99.

<sup>262</sup> Ibid.

<sup>263</sup> Ibid., 96.

<sup>264</sup> Grant, *Planets, Stars, and Orbs*, 155. The decree actually had the effect of spurring some scientific investigation, because scholastic needed to square the possibility of plurality with Aristotelian science. Debates also occurred of the method of justifying unity, like Giles of Rome attacks on Aquinas' argumentation, but not conclusion. Graham James McAleer, "Disputing the Unity of the World: The

the most important tenants of Catholic Christianity and the denial of the possibility of plurality challenged that power.<sup>265</sup> Many accounts that appeared positioned to defend the actuality of plurality, ultimately refused to do so.<sup>266</sup> A typical example, in the thirteenth century, Nicole Oresme wrote extensive rebuttals to Aristotle's scientific arguments against plurality, but concluded, "there has never been nor will there be more than one corporeal world."<sup>267</sup> Dick described the strange phenomenon of arguing up to the point of plurality but refusing to endorse it as, "a prime example of the uniquely medieval mixture of boldness and conservatism, of the appeal to reason still dominated by appeal to authority."<sup>268</sup> The appeal to Aristotle's authority certainly had much to do with the refusal to discard belief in unity.<sup>269</sup> Notwithstanding, Aristotle's authority, however, Christian scholars had jettisoned elements of Aristotle's corpus that disagreed with Biblical teaching, like the belief that the universe existed eternally. This meant that unity must have at the very least been viewed as compatible with Christianity.

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Importance of Res and the Influence of Averroes in Giles of Rome's Critique of Thomas Aquinas concerning the Unity of the World," *Journal of the History of Philosophy* 36, no. 1 (1998): 29-55.

<sup>265</sup> Roland Hissette study of the condemnations suggests the theme of God's omnipotence in relation to science, runs throughout the articles. Roland Hissette, *Enquête sur les 219 articles condamnés à Paris le 7 mars, 1277* (Louvain: Publications Universitaire, 1977); Hans Thijssen, "Condemnation of 1277," *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/condemnation/>.

<sup>266</sup> Dick, *Plurality of Worlds*, 37; Pierre Duhem, *Medieval Cosmology: Theories of Infinity, Place, Time, Void, and the Plurality of Worlds*, trans. Roger Ariew (Chicago: University of Chicago Press, 1985), 449-72.

<sup>267</sup> Nicole Oresme, *Le Livre du Ciel et du Monde*, trans. Albert D. Menut (Madison: University of Wisconsin Press, 1968), 179. William of Ockham, Jean Buridan, William Vorilong, and Guillaume de Vaurouillon represent other example of individuals defending the possibility, but not actuality of plurality. They opposed thinkers like Michael Scot, William of Auvergne and Roger Bacon, who suggested that plurality was simply impossible. Thomas F. O'Meara, "Christian Theology and Extraterrestrial Intelligent Life," *Theological Studies* 60 (1999): 13-15; Duhem, *Medieval Cosmology*, 442-49, 60-71. Grant argues the only scholastic to actually defend the existence (not just possibility of plurality) was John Major, who is discussed briefly later in the chapter. Grant, "A New Look at Medieval Cosmology, 1200-1697," 155.

<sup>268</sup> Dick, *Plurality of Worlds*, 37.

<sup>269</sup> Rubenstein, *Aristotle's Children*, 67; Grant, "Aristotelianism and the Longevity of the Medieval World View," 94-96.

In fact, unity not only was viewed as compatible with Christianity, but many individuals viewed it as crucial. It was the philosophical and theological implications of plurality that prevented scholars from seriously advocating it. The 1277 edict forced a consideration of arguments for plurality, because to deny God the ability to create any universe he wished is heresy. The actuality of plurality, however, would call into question the perfection of our universe and divine providence, for precisely the reasons that Aquinas lays out so forcefully.

From Aquinas to the sixteenth century, only a handful of individuals argued that God *actually* had created a plurality. Cardinal Nicholas of Cusa (1401-1464) the most notable exception, not only asserted the existence of planets, but their inhabitation.<sup>270</sup> Ingrid Rowland, however, argues Cusa wrote in a style that made his claims much more ambiguous than many scholars recognize. Following contemporary conventions, he used paradox to demonstrate his argument, which would make it difficult for hostile individuals to pin down his precise position.<sup>271</sup> Cusa also wrote at a time when the church felt comparatively secure in its power, although it faced the Western schism, Waldensians in Italy, and Lollards in England, it did not face a challenge as great as later Protestantism. This resulted in more intellectual freedom that would be found once the counterreformation had taken hold.<sup>272</sup> Even if one views Cusa's work as a clear and open defense of the actual existence of plurality he fits well under the adage, plurality still existed as a minority discourse.

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<sup>270</sup> Nicolas Cusanus, *Of Learned Ignorance*, trans. Father Germain Heron (New Haven, 1954), 111-16.

<sup>271</sup> Ingrid D. Rowland, "What Giordano Bruno Left Behind: Rome, 1600," *Common Knowledge* 14, no. 2 (2008): 425, 26 ; Louis Dupre and Nancy Hudson, "Nicholas of Cusa," in *A Companion to Philosophy in the Middle Ages*, ed. Jorge J. E. Gracia and Timothy B. Noone (Malden, MA: Blackwell, 2002), 468.

<sup>272</sup> Toulmin, *Cosmopolis*, 77.

### 3.5 THE COPERNICAN SYSTEM

The sixteenth century began to show a few cracks in the unity argument's ascendancy. John Major, a scholastic scholar, unambiguously argued for an infinite number of worlds.<sup>273</sup> In his texts he cites Democritus, which he may have been introduced to through means of Lucretius's recently available *De rerum natura*. The biggest challenge to unity, however, came with the Copernican system's contestation of Aristotelian cosmology.

Copernicus developed a heliocentric model for the solar system, which placed the Earth, rather than the Sun, at the center. The Copernican model did not initially attract much attention from the Church, in part because most scholars, with the exception of a limited group of scientists, did not take it very seriously. Copernicus' *On the Revolutions of the Heavenly Spheres* (Nuremberg 1543 and Basel 1566), laid out the case for his heliocentric universe, but he wrote the book in a style that made it inaccessible to all but a few astronomers.<sup>274</sup> Copernicus, perhaps aware of the controversy his book would cause, closed his introduction with the claim that his target audience was fellow mathematicians: "Mathematics is written for mathematicians; and among them, if I am not mistaken, my labours will be seen to contribute something to the ecclesiastical commonwealth."<sup>275</sup> Over the next few decades, scholars borrowed from Copernicus' diagrams and used his mathematical

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<sup>273</sup> Grant, *Planets, Stars, and Orbs*, 166-68.

<sup>274</sup> Kuhn, *The Copernican Revolution*, 185. Gingerich complicates this view, by showing the wide-ranging readership of the book, but it still appears the idea of heliocentrism took hold slowly. Owen Gingerich, *The Book Nobody Read: Chasing the Revolutions of Nicolaus Copernicus* (New York: Walker, 2004).

<sup>275</sup> Nicolaus Copernicus and Stephen Hawking, *On The Revolutions of Heavenly Spheres* (Philadelphia: Running Press 2002), 5.

models, but did not endorse the heliocentric system. As the ideas of *On the Revolutions* slowly became more widely accepted, heliocentrism crept into scientific thinking.<sup>276</sup> Later Johannes Kepler and Galileo Galilei would complete the work of popularizing heliocentrism.

Some scholars (including many apologists for the Catholic Church) try to downplay the significance of the Copernican theory.<sup>277</sup> They claim that the earth did not hold a privileged material position in the Platonic/Aristotelian cosmos. In these old systems the celestial objects represented perfection, whereas earth represents the degraded “becoming.” The move of the earth from central to an orbit with the planets, thus, represents an increase in status if nothing else. This reasoning holds a certain logic, but an anachronistic one that has little to do with the way most people actually perceived heliocentrism. Copernicanism did not elevate earth to the realm of the celestial objects. By making the celestial objects planets like earth it degraded the whole universe.<sup>278</sup> Perhaps most problematic, it raised the serious possibility of plurality. If Earth did not have a central, special location, but instead orbited the sun just like Mars, Jupiter, Venus, etc., then it could be reasonably inferred that those bodies were planets similar to Earth. Changing the astronomical bodies from celestial spheres to planets, opened up the possibility that they could have inhabitants.

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<sup>276</sup> Kuhn, *The Copernican Revolution*, 185-91.

<sup>277</sup> Guillermo Gonzalez and Jay W. Richards, *The Privileged Planet: How Our Place in the Cosmos is Designed for Discovery* (Washington D.C.: Regnery Publishing 2004), 226-28; Lovejoy, *The Great Chain of Being: A Study of the History of an Idea*, 102; Guy Consolmagno, *Aquinas Lecture* (Atlanta: The Aquinas Center, Emory University, 2010), Audio Lecture; Alexandre Koyré, *From Closed World to the Infinite Universe* (Baltimore: John Hopkins University, 1982), 43.

<sup>278</sup> Kuhn, *The Copernican Revolution*, 193.

Giordano Bruno, influenced both by Latin Averroesism and Platonism, helped make clear these potential dangers through his bold cosmological writings. Bruno, a mathematician, astronomer, and memory theorist, traveled across Europe and preached the existence of an infinite number of worlds. In his writings he flipped Aquinas' argument and said that a plurality of worlds better reflected the goodness of God:

This argument is the more cogent since, if it is reasonable to postulate a finite goodness, a bounded perfection, all the more reasonable is the conception of an infinite goodness. For whereas finite goodness appeareth to us reasonable and convenient, the infinite is an imperative necessity.... We are then at one concerning the incorporeal infinite; but what preventeth the similar acceptability of the good, corporeal and infinite being? And why should not that infinite which is implicit in the utterly simple and individual Prime Origin rather become explicit in his own infinite and boundless image able to contain innumerable worlds, than become explicit within such narrow bounds? So that it appeareth indeed shameful to refuse to credit that this world which seemeth to us so vast may not in the divine regard appear a mere point, even a nullity?<sup>279</sup>

The inspiration for his "new" cosmology came from Copernicus' heliocentric system. He argued that the Copernican system set the stage for a revolutionary new order

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<sup>279</sup> Giordano Bruno, "On the Infinite Universe and Worlds," in *Giordano Bruno: His Life and Thought*, ed. Dorothea Waley Singer, trans., Dorothea Waley Singer (New York: Henry Schuman, 1950), 257.

including the unity between Protestants and Catholics and the emergence of Hermetic Christianity.<sup>280</sup>

Bruno's vocal advocacy of his cosmology contributed to his demise; in 1600, the Papal inquisition sentenced Bruno to death by fire for heresy. Unlike Cusa who had written on plurality before him, Bruno did not mask his work in paradox. For example, he wrote, "Thus is the excellence of God magnified and the greatness of his kingdom made manifest; He is glorified not in one, but in countless suns; not in a single earth, a single world, but in a thousand thousand, I say in an infinity of worlds."<sup>281</sup> Bruno also based his cosmology on the Copernican system, a scientific framework, which lent legitimacy to his ideas.<sup>282</sup> Unlike Cusa, whose work existed only as theological musings ungrounded in any scientific basis. Most importantly, Bruno wrote at a time when the Catholic Church felt a serious threat from Protestantism, which meant the Inquisition was especially concerned about heretical doctrines.

Historians disagree on the extent to which Bruno's belief in plurality caused his death. The prevailing historiography now suggests that Bruno was killed for a combination of political reasons and his belief in hermetic magic rather than his commitment to the plurality.<sup>283</sup> Because the Church has since destroyed the file the extent of his cosmology's role in his execution may never be known for sure. Largely

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<sup>280</sup> The Hermetic tradition represented a form of ancient mysticism that emphasized magical powers. Gosselin and Lerner, "Introduction," 27-29, 41-53.

<sup>281</sup> Giordano Bruno as quoted in Michael J. Crowe, *Theories of the World from Antiquity to the Copernican Revolution* (Mineola, NY: Dover, 2001).

<sup>282</sup> Karl S. Guthke, *The Last Frontier: Imagining Other Worlds, from the Copernican Revolution to Modern Science Fiction*, trans. Helen Atkins (Ithaca: Cornell University, 1990), 42.

<sup>283</sup> Gosselin and Lerner, "Introduction."



unexplored in the debate over Bruno's death is the possibility that his cosmology and other beliefs cannot be separated from each other.<sup>284</sup> To say that the Catholic Church did not kill Bruno because of his cosmology, ignores the fact that Bruno saw his cosmology as providing the foundation for the radical changes he wanted to enact in society.<sup>285</sup>

Whether or not Bruno died for his belief in plurality, the Church opposed his cosmology, as Thomas Kuhn writes, "he had given [Copernicanism] a significance not to be found in *De Revolutionibus*."<sup>286</sup> The Copernican system now presented itself not only as a potential rival cosmology, but also as a rival mythic cosmology. Bruno's infinite worlds not only called into question unity, but also explicitly called into question some of the foundational Christian beliefs tied to unity. The popular reaction to the news of Bruno's death also suggests that many people believed that he died for his belief in plurality. Bruno's execution made Descartes hesitant to write about the plurality of worlds.<sup>287</sup> Bruno's death made him a martyr for plurality, famous among intellectuals like Edmund Spenser, Francis Godwin, and the School of Night, a group of scientists and philosophers.<sup>288</sup>

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<sup>284</sup> Stanley Jeyaraja Tambiah, *Magic, Science, Religion, and the Scope of Rationality* (Cambridge: Cambridge University Press, 1990), 24-28.

<sup>285</sup> Gosselin and Lerner, "Introduction," 27-29, 41-53. Another possibility, the Catholic Church may have used Bruno's clearly heretical belief in hermetic magic as a justification to rid themselves of his more troubling plurality cosmology.

<sup>286</sup> Kuhn, *The Copernican Revolution*, 199.

<sup>287</sup> Dick, *Plurality of Worlds*, 112.

<sup>288</sup> Guthke, *The Last Frontier*, 76.

### 3.6 GALILEO AND HIS TELESCOPE

Copernicus' theory gained ground because it had slightly better effectiveness at explaining celestial movements than the previous model. Galileo's telescope provided much stronger proof for the Copernican system, by furnishing difficult to refute evidence about the nature of the solar system. Through his telescope Galileo observed that the moon had topological features much like earth and that Jupiter had a series of moons. The celestial bodies no longer appeared as perfectly formed objects, but more similar to earth. Galileo's observations translated to the public much easier than Copernicus' mathematical charts, which raised the attention of the inquisition.

In 1616 the Catholic Church briefly banned Copernicus' book, because of the attention Galileo brought to the question of heliocentrism.<sup>289</sup> In 1632, Galileo published *Dialogue Concerning the Two Chief World Systems*, in which he depicts the geocentric view as foolish. Thomas Kuhn remarks on the strange fact that the Church's reaction to heliocentrism occurred, not in the initial stages of the theory, but when the evidence had become all but overwhelming.<sup>290</sup> The charges brought against Galileo suggest this new concern with heliocentrism undoubtedly came from its increasing connection to the question of plurality.

Of the eleven charges brought against Galileo two dealt with the plurality of worlds. The eighth charge accuses Galileo of claiming the moon has earth like

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<sup>289</sup> Ibid., 95. The Catholic Church reapproved the book in 1620 with new language that made it clear heliocentrism was only a thought experiment, rather than a description of reality. An examination of extant texts, however, indicate that not many were actually censored outside of Italy. Owen Gingerich, "The Censorship of Copernicus' *De revolutionibus*," *JASA* 33 (1981): 58-60.

<sup>290</sup> Kuhn, *The Copernican Revolution*, 199. One hypothesis for this is that Kuhn did not have the advantage of a couple of decades of the "history of the book" scholarship that shifts discussion from the ideas to the circulation of material texts and their reception practices.

qualities like water and mountains, which denies the ethereal nature of celestial bodies.<sup>291</sup> The belief that the moon has planet-like qualities sets the stage for the ninth charge, which indicates that Galileo's model opens up the possibility of, "many worlds and earths and seas...and that there are human beings living there."<sup>292</sup> The Church argued that plurality contradicted the scriptures and raised questions about whether Jesus needed to be crucified multiple times in order to save each world's population.<sup>293</sup> The fact that two charges on plurality made their way into the trial suggests that plurality represented one of the ultimate concerns of the Church.

Galileo appeared to recognize the danger of supporting plurality, even as he defended a heretical heliocentric cosmology. In his early works he avoided any discussion of plurality. He did this despite the fact that his telescopic observations of earth like qualities of the supposed "ethereal objects" had obvious implications for the question of plurality. Many of those who read his works made this connection and when they pressed Galileo to discuss it he gave a noncommittal answer.<sup>294</sup> The man bold enough to write a devastating portrayal of defenders of geocentrism as ignorant fools, refused to get himself entangled in the plurality debate.<sup>295</sup>

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<sup>291</sup> Thomas Campanella, *A Defense of Galileo the Mathematician of Florence: Which is an Inquiry as to Whether the Philosophical View Advocated by Galileo Is in Agreement with, or Is Opposed to, the Sacred Scriptures*, trans. Richard J. Blackwell (London: University of Notre Dame Press, 1994), 44. The accusation refers to Galileo's *Sidereus nuncius* (1610), where he claims the moon has mountains, water, and an atmosphere. Not long after he wrote the book he abandoned his claims about water and atmosphere. Ibid., 135, footnote 25. The fact that Galileo never gives an indication that he believed the planet actually were inhabited, suggests that the Inquisition had a problem with the implications of his theories for life and not Galileo's interpretation of his theory.

<sup>292</sup> Ibid., 45.

<sup>293</sup> Ibid.

<sup>294</sup> Guthke, *The Last Frontier*, 96-97.

<sup>295</sup> Grant, "A New Look at Medieval Cosmology, 1200-1697," 418. Guthke raises the possibility that Galileo's evasions on the subject actually reveal his true, pro-plurality position. If this is true it means that fear of reprisals probably was the reason Galileo did not state his opinion more openly. Guthke, *The Last Frontier*, 97.

Church figures referred to plurality as the “new heresy.”<sup>296</sup> Pierre de Cazre, rector of the College of Dijon described how the danger of heliocentrism is not the location of the earth, but that it opens up the possibility of plurality,

If the earth is doubtless one of the planets and also has inhabitants, then it is well to believe that inhabitants exist on the other planets and are not lacking in the fixed stars, that they are even of a superior nature and in proportion as the other stars surpass the earth in size and perfection. This will raise doubts about Genesis which says the earth was made before the stars and they were created on the fourth day to illuminate the earth and measure the seasons and years. Then in turn *the entire economy of the Word incarnate and of scriptural truth will be rendered suspect.*<sup>297</sup>

The Bible, like most religions, presents an anthropocentric creation myth. Cazre feared that plurality ultimately conflicted with this central element of Christianity. Gabriel Naudé, physician to Louis XIII, declared plurality the greatest heresy:

I am afraid that those old theological heresies are nothing compared to the new ones the astronomers are seeking to introduce with their worlds, or rather lunar and celestial earths. For the consequences of these heresies will be far more

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<sup>296</sup> Marjorie Nicolson, *Science and Imagination* (Ithaca: Cornell University Press, 1962), 55.

<sup>297</sup> Camille Flammarion, *La Pluralité des Mondes Habités*, 2 ed. (Paris 1864), 341; Crowe, *Extraterrestrial Life Debate*, 16-17.

dangerous than those of the earlier ones and will bring about many stranger upheavals.<sup>298</sup>

To appreciate the boldness of Naudé's statement one must remember the ferocity with which the Church ferreted out and eliminated heretical views. Although he does not say why plurality poses a greater danger, one can imagine reasons.<sup>299</sup>

The scientific element of the heresy raised serious rhetorical concerns for the Church. The claim that the Catholic Church has an expertise in Bible goes without saying; confronting other heresies meant a debate on the ground where the Church felt comfortable.<sup>300</sup> The fragility of Aquinas's solution of the double-truth dilemma was becoming evident. Plurality gained supporters by means of the scientific evidence for its existence, an area outside the well-worn confines of theological debates. Scientific claims have a veneer of objectivity that comes from their foundation in empirical observation. Passages on the presence or absence of other worlds proved vague and could always be ready metaphorically, telescopic observations held the position of fact and less easily open to interpretation.<sup>301</sup>

The scientific nature of the heresy of plurality raised three possibilities for the Church. First, they could provide their own scientific defense of religious dogma, such as geocentrism. This had been the basic strategy throughout the middle ages,

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<sup>298</sup> Gabriel Naudé to Ismael Boulliau, 15 August 1640, quoted in Guthke, *The Last Frontier*, 48.

<sup>299</sup> Apparently, there is little discussion in these sources that can be deemed as "scientific." Most of the reactions against plurality focused on religious and philosophical arguments.

<sup>300</sup> If the double truth approach had been victorious than the cosmological refutation of Aristotle's cosmology would not have been nearly as big of a concern.

<sup>301</sup> The rise of occularcentrism helped give further credibility to the telescopic observations. David Michael Levin, *Sites of Vision: The Discursive Construction of Sight in the History of Philosophy* (Cambridge, MA: MIT Press, 1997).

with the Church investing heavily in the defense of the Aristotelian system. The new discoveries, however, made this increasingly ineffective. Second, they could denounce or at the very least question science, like Augustine had in the thirteenth century. Unfortunately, the window for the Church to call into question science had passed. By the 1600s Catholicism, following Aquinas, had firmly established the harmony between religion and science. A move to denounce science would require significant backtracking on the part of the Church. Third, they could open themselves to the *possibility* of plurality, which is the direction the Catholic Church (and many other Christian religious groups) ultimately chose.

The move towards plurality, however, faced significant opposition, because of unity's connection with philosophical and religious values. The need to maintain harmony between religion and science ultimately forced a de facto acceptance of heliocentrism. After Isaac Newton developed his new physics in *Philosophiae Naturalis Principia Mathematica* (1687), the case for geocentrism became all but impossible to take seriously.<sup>302</sup> The plurality question, however, lacked much empirical evidence in its favor. Many individuals accepted heliocentrism, but opposed the implication of plurality. Even though he accepted Copernicanism, Reverend Robert Jenkin, provides a rather standard version of Plato's unity argument,

Anaxagoras said, he was sent into the World to contemplate the heavenly Bodies: And the contemplation of them has contributed more than any one thing in Nature besides, to preserve a sense of Religion among Heathens...

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<sup>302</sup> Grant, "In Defense of the Earth's Centrality and Immobility," 67.

And these Parts of Nature which are so beneficial, and afford such satisfaction to Mankind in general, may fully answer all the Ends needful in their Creation, tho' they should not be designed for such farther uses, as some modern Philosophers have contrived for them.<sup>303</sup>

Jenkin argues that study of the universe instills proper values, even in those that had not been exposed to Christianity. This represents the purpose of the planets, rather than as a home to alien life. The use of the structure of the universe as a model for human goodness harkens back to Plato's *Timaeus*.

Thomas Baker, a fellow of St. John's College in Cambridge, defends unity in his book *Reflections Upon Learning* (1699). He claims humanity serves as a worthy purpose of the universe,

These World-Mongers are always objecting the improbability of GOD's framing so many vast and Glorious Bodies, only for the sake of the Earth, so inconsiderable a portion of the Whole... There is more Beauty and Contrivance in the Structure of a Human Body, than there is in the Glorious Body of the Sun; and more Perfection in one Rational Immaterial Soul, than in the whole Mass of Matter, be it never so bulky. There cannot then be any Absurdity in

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<sup>303</sup> Jenkin, *The Resonableness and Certainty of the Christian Religion*, 205.

saying, That all Things were created for the sake of this inferior World, and the Inhabitants thereof.<sup>304</sup>

He rejects the assertion that so much space would be wasted if it lacked inhabitants, by elevating humanity. He claims more beauty in the human form than exists in the sun, which amounts to the argument that humanity is so important that God created the vast universe for their viewing pleasure.

Individuals like Baker and Jenkins tried to preserve the socially stabilizing discourse of the Aristotelian cosmology, by salvaging the only physical aspect of it they could: unity. Plato provided a scientific justification of the Good that rested on ethereal celestial objects, orderly orbits, geocentrism, and unity. Galileo and Newtown undermined the case for ethereal celestial objects, orderly orbits, and geocentrism. Although heliocentrism did not disprove unity, its view of the celestial objects as planet-like opened the door to plurality.

### 3.7 THE SHIFT TO PLURALISM

The widespread acceptance of heliocentrism radically altered cosmological thinking, opening the door to plurality.<sup>305</sup> Plurality began to gain a foothold among intellectuals

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<sup>304</sup> Thomas Baker, *Reflections Upon Learning: Wherein is Shewn the Insufficiency Thereof, in its Several Particulars: In order to evince the Usefulness and Necessity of Revelation*, 4 ed. (London: Dyal and Bible, 1708), 119.

<sup>305</sup> Toulmin, *Cosmopolis*, 82-87; Kuhn, *The Copernican Revolution*, 2.



like the Northumberland circle in England.<sup>306</sup> But the popularization of plurality came from Bernard le Bovier de Fontenelle in his book *Conversations on the Plurality of Worlds* (1686). Fontenelle uses a fictional dialogue, the style of Plato and Galileo, between a scholar and a female Marquise that in very casual, accessible prose explores the possibility of plurality.

*Conversations* identifies the unity of the world rhetorical argument:

The same desire which makes a courtier want to have the most honorable place in a ceremony makes a philosopher want to place himself in the center of a world system, if he can. He's sure that everything was made for him, and unconsciously accepts that principle which flatters him, and his heart will bend a matter of pure speculation to his interest.<sup>307</sup>

Fontenelle specifically highlights the strong perceived connection between human specialness and cosmology unity and later has the Marquise muse on the potential sense of pointlessness that would come with plurality:

I'm beginning to see the Earth so frighteningly small that I believe hereafter I'll be impressed by another thing. Assuredly, if people have such a love of acquisition, if they make up plan after plan, if they go to so much trouble, it's because they don't know about vortices. I can claim that my new

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<sup>306</sup> Dick, *Plurality of Worlds*, 48.

<sup>307</sup> Fontenelle, *Conversations on the Plurality of Worlds* (Berkeley: University of California Press, 1990), 17.

enlightenment justifies my laziness, and when anyone reproaches me for my indolence I'll answer: 'Ah, if you knew what the fixed stars are!'<sup>308</sup>

Fontenelle elsewhere, however, relishes in the overturning of the Aristotelian system and its replacement with a gigantic inhabited cosmos:

When the sky was only this blue vault, with the stars nailed to it, the universe seemed small and narrow to me; I felt oppressed by it. Now that they've given infinitely greater breadth and depth to the vault by dividing it into thousands and thousands of vortices, it seems to me that I breathe more freely... The inhabitants of a planet in one of these infinite vortices see on all sides the lighted centers of the vortices surrounding them.<sup>309</sup>

Despite making the Vatican's list of dangerous books, *Conversations on the Plurality of Worlds* went on to sell out of numerous editions and by 1800 had been translated into Danish, Dutch, German, Greek, Italian, Polish, Russian, Spanish, and Swedish.<sup>310</sup> Fontenelle's work on alien life so fascinated the public that Samuel Pierpont Langley, the inventor of the bolometer, wrote over 200 years later that *Conversations on the Plurality of Worlds* represents the first example of a popular science text.<sup>311</sup>

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<sup>308</sup> Ibid., 63-64.

<sup>309</sup> Ibid., 63.

<sup>310</sup> Crowe, *Extraterrestrial Life Debate*, 19. It is worth noting that Fontenelle later wrote *Digression sur les Anciens et les Modernes* (1688). In the book he opposes absolute monarchy and makes a case that the new ideas of the present are better than classical ideals. Nina Rattner Gelbart, "Introduction," in *Conversations on the Plurality of Worlds* (Berkeley: University of California Press, 1990).

<sup>311</sup> S. P. Langley, "The First 'Popular Science Treatise'," *Popular Scientific Monthly* 10 (1877).

While Fontenelle provided the publicly accessible introduction to plurality, Christiaan Huygens gave plurality scientific credibility.<sup>312</sup> Before he wrote about plurality, Huygens, a famous Dutch astronomer and mathematician, already had achieved fame for accomplishments like discovering the moon Titan. In his book *Cosmotheoros* (1698), he outlines arguments for plurality, much like Fontenelle, but with, “a more scientifically developed presentation.”<sup>313</sup> *Cosmotheoros* and *Conversations on the Plurality of Worlds* together spearheaded a tidal wave of pluralist thinking.<sup>314</sup>

Interestingly, belief in pluralism of worlds coincided with a pluralism of cultural, political, and religious power centers. The rise of nation states began to replace the sprawling Empires of the past. Vernacular language gained ground against the old Latin-based unification of learning. The Reformation had created a plurality of denominations to challenge Catholic Ascendancy. The Ottoman Empire threatened Austria and Christendom more generally. Two whole continents of previously unheard of people had been discovered. The world moved ever more towards plurality of social structures.

By the early 1800s most scientists who studied the question of alien life believed the issue had been settled decisively in favor of plurality.<sup>315</sup> The idea that so much space could exist without inhabitants struck them as incredibly wasteful and inconsistent with the way that one finds life in even the remotest parts of the planet

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<sup>312</sup> Fontenelle also provided a clever response to the inquisitions claim that plurality would mandate multiple comings of Christ on other planets. He claimed that aliens would not be descendents of Adam and thus not effected by original sin. Fontenelle, *Conversations on the Plurality of Worlds*, 6.

<sup>313</sup> Crowe, *Extraterrestrial Life Debate*, 20.

<sup>314</sup> Ibid., 18-22; Guthke, *The Last Frontier*, 226-44.

<sup>315</sup> Crowe, *Extraterrestrial Life Debate*, 263-64.

Earth. They advocated a principle of plentitude that said life would be found wherever it could possibly emerge.<sup>316</sup> The *Eclectic Review*, a high brow British periodical wrote, “the probability that the other orbs of our system are inhabited worlds must appear so great, that a direct revelation from heaven disclaiming the fact, would make but little difference in our assurance of it.”<sup>317</sup> While the *Eclectic Review*’s defense of pluralism went beyond most others in terms of its bombast, most writers shared the general sentiment.<sup>318</sup> The offbeat theory of Fontenelle began to look more and more like scientific orthodoxy.

Not only did scientists accept pluralism, evidence suggests that the idea escaped from academic enclaves and seeped into mainstream thinking. In 1795, the internationally known propagandist and polemicist whose work was central to both the American and French revolutions, Thomas Paine proclaimed,

Though it is not a direct article of the Christian system that this world that we inhabit is the whole of the habitable creation, yet it is so worked up therewith, from what is called the Mosaic account of the Creation, the Story of Eve and the apple, and the counterpart of that story—the death of the Son of God—that to believe otherwise, that is, to believe God create[d] a plurality of worlds, at least as numerous as what we call the stars, renders the Christian system of faith at once little and ridiculous, and scatters it in the mind like feathers in the

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<sup>316</sup> Isaac Todhunter, *William Whewell, D.D., Master of Trinity College, Cambridge; An Account of his Writings with Selections from his Literary and Scientific Correspondence*, vol. 1 (New York: Johnson Reprint Corporation, 1970), 185.

<sup>317</sup> “Chalmer’s Discourses on the Christian Revelation,” *Eclectic Review*, no. 8 (1817).

<sup>318</sup> Crowe, *Extraterrestrial Life Debate*, 190-91.

air. The two beliefs cannot be held together in the same mind; and he who thinks that he believes both has thought but little of either.<sup>319</sup>

Paine used the common belief in plurality as a justification for an attack on Christianity. Paine, an avowed deist, opposed the belief that God actively interferes in the affairs of humans. He uses the prospect of a universe full of inhabited planets to suggest that it would be ridiculous to imagine God intervening in the affairs of earth. He thus inverts Plato's argument, if unity makes humanity special then plurality makes it unimportant.

Paine's text went through eight editions in 1794, seven the following year and two in 1796.<sup>320</sup> Paine's work brought deist ideas to the common people in an enormously effective manner and became a best seller in France, England, and the US.<sup>321</sup> Britain, fearful of radical ideas in the wake of the French Revolution, ultimately banned the book and prosecuted hundreds of booksellers over thirty years for violating the law.<sup>322</sup>

Rather than launch an attack on pluralism to combat its potential deist implications, like it had Copernicism, the most elements of the Christian Church largely agreed with Paine's belief in plurality, but, of course, not his conclusion. A fiery preacher of the Free Church of Scotland, Dr. Thomas Chalmers lectured extensively on the question in 1817 and claimed that no tension existed between

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<sup>319</sup> Thomas Paine, *The Age of Reason*, vol. 1 (London, R. Carlile, London 1826: R. Carlile, 1826), 38.

<sup>320</sup> Gregory Claeys, *Thomas Paine: Social and Political Thought* (Florence, KY: Routledge, 2004).

<sup>321</sup> Patricia Fara, "Heavenly Bodies: Newtonianism, Natural Theology, and the Plurality of Worlds Debate in the Eighteenth Century," *Journal for the History of Astronomy* 35, no. 2 (2004): 151.

<sup>322</sup> Jacob Bronowski, *William Blake and the Age of Revolution* (London: Routledge, 1972), 81.

Christianity and alien planets. In fact, argued Chalmers, pluralism demonstrated the awesome power of God, a revival of a view that precedes Aquinas.<sup>323</sup> Chalmers's lectures became a smashing success. Samuel Warren, an English barrister wrote that as a boy he waited four hours to hear Chalmers lecture on pluralism and Christianity and even with the wait he did not come early enough to get a chair.<sup>324</sup> Chalmers collected his sermons on pluralism into a book, which sold 6,000 copies in ten weeks. By the end of a year it had sold 20,000 copies and gone through nine editions.<sup>325</sup>

Religious acceptance of pluralism paved the way for it to emerge in other contexts. Crowe argues that the astronomer Ormsby MacKnight Mitchel convinced the population of Cincinnati to fund the world's second largest refracting telescope in part by his appeal to pluralism.<sup>326</sup> Much as the Aristotelian cosmology became a commonplace of the medieval period, pluralism began to become a part of everyday life.

The scientific discussion of plurality primed the American public to accept even the most bizarre tales of alien life. In 1835, the American journalist Richard Adams Locke, who claimed a Cambridge University pedigree, wrote a series of newspaper articles about discoveries of life on the Moon, which he attributed to famed astronomer John Herschel. In reality, he completely fabricated the contents of the articles, which included absurd findings like the presence of blue unicorns and a race

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<sup>323</sup> Thomas Chalmers, *A Series of Discourses on the Christian Revelation, Viewed in Connection with the Modern Astronomy*, 10 ed. (Glasgow: Robert Chapman, 1822).

<sup>324</sup> Samuel Warren, "Speculators among the Stars, Part II," *Blackwood's Edinburgh Magazine* 76 (1854).

<sup>325</sup> William Hanna, "Memoirs of the Life and Writings of Thomas Chalmers, D. D., K.K. D.," *The Living Age* 27, no. 333 (1850): 22.

<sup>326</sup> Ormsby MacKnight Mitchel, *Orbs of Heaven* (London: Bradbury and Evans, 1851), 221-23; Philip S. Shoemaker, "Stellar Impact: Ormsby MacKnight Mitchel and Astronomy in Antebellum America" (Diss., University of Wisconsin-Madison, 1991), 186-231; Crowe, *Extraterrestrial Life Debate*, 234.

of bipedal tool-using Beavers.<sup>327</sup> Locke meant the article to satirize the outlandish claims of the defenders of plurality, but the public largely accepted the story as true scientific discovery.<sup>328</sup> When an enterprising journalist uncovered the fact that the article contained no element of truth, newspapers denounced it as a hoax rather than a satire. Crowe explains the refusal to accept the article as satire, “It was not that Locke lacked the skills of a satirist; it was rather that pluralist preaching and pronouncements had so permeated the thought of his contemporaries that they first failed to see the articles as satire, and failed again as they branded them a ‘hoax.’”<sup>329</sup> Fantastic pluralist ideas had taken such a hold on the public that they accepted Locke’s absurd story as truth.

A review of early American newspaper articles in the database *American Periodicals Series* (APS) showed fifty-seven results for the phrase “plurality of worlds,” between 1774-1849.<sup>330</sup> Of the articles that took positions on the question, eight supported plurality and only one opposed it. This provides further proof of pluralist opinions in the general public.

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<sup>327</sup> "Great Astronomical Discoveries Lately Made By Sir John Herschel, L.L.D, F.R.S, &c. At The Cape of Good Hope," *New York Sun*, August 25, 1835. The story ran for several days and gave a major sales boost to Benjamin Day’s *New York Sun* (notable as the first penny paper). Brian Thornton, "The Moon Hoax: Debates About Ethics in 1835 New York Newspapers," *Journal of Mass Media Ethics* 15, no. 2 (2000): 89-100.

<sup>328</sup> Crowe, *Extraterrestrial Life Debate*, 210-15; Steven W. Ruskin, "A Newly-discovered Letter of J.F.W. Herschel Concerning the 'Great Moon Hoax'," *Journal for the History of Astronomy* 33 (2002): 71-72.

<sup>329</sup> Crowe, *Extraterrestrial Life Debate*, 215.

<sup>330</sup> The fifty-seven results are after removing advertisements and book lists. Another three of those fifty-seven results do not refer to plurality in the sense of alien worlds.

### 3.8 CONCLUSION

Prior to Copernicus, Plato's grand strategy for his rhetorical cosmology appears to have come true. He wanted a philosophical defense of goodness intertwined with scientific theory and a ban upon rival cosmologies. Aquinas' updated version of Aristotle's cosmology combined the latest scientific thinking with Plato's ideas from the *Timaeus*. The rejection of the dual truth approach of the Avicennians joined Christianity with natural philosophy. As far as banning rival cosmologies, most of the Greek cosmologies opposed to Plato's did not make their way to Europe until the fifteenth century. The universities taught the Aquinian/Platonic/Aristotelian cosmology and the threat of excommunication or death loomed over those that strayed too far from Church dogma. The actualization of Plato's program had exactly the kind of results he desired. The unity cosmology, as part of the broader Aristotelian cosmology, integrated itself so deeply into the popular imagination that it went without saying. This allowed it to offer a strong foundation for social stability, religion, and absolute ideals.<sup>331</sup>

The Copernican revolution represented the end for most elements of the Aristotelian cosmology. The scientific upheaval coincided with massive political, religious, and social change throughout Europe. Some individuals tried to maintain a version of Aristotle's cosmology and thus reinstate its rhetorical power to quell change by highlighting the one aspect that heliocentrism had yet to disprove: unity. Despite

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<sup>331</sup> Edson and Savage-Smith, *Medieval Views of the Cosmos*, 9-20; Toulmin, *Cosmopolis*; Tillyard, *The Elizabethan World Picture*; Randles, *The Unmaking of the Medieval Christian Cosmos*, X-XI, 3; Hetherington, "Introduction: The Aristotelian World View," 177; Cornish, "Dante's Moral Cosmology."; Lewis, *The Discarded Image*.



their efforts, pluralism gained enormous ground. Plurality went from something a few scholars theorized, but did not actually defend, to a popular belief. This sets the stage for the 1800s, where two enormously important figures offer defenses of unity: William Whewell and Alfred Russel Wallace.

#### 4.0 WILLIAM WHEWELL AND ALFRED RUSSEL WALLACE: UNITY COSMOLOGY IN THE MODERN ERA

“They say in Cambridge that Dr. Whewell's book, ‘Plurality of Worlds,’ reasons to this end: The planets were created for this world; this world for man; man for England; England for Cambridge; and Cambridge for Dr. Whewell!”<sup>332</sup>

Maria Mitchell American astronomer, November 1857

“Sir Oliver Lodge has himself said that the attempt to explain the universe by chance has absolutely failed. It must have had a designer... My whole argument tends in that direction, though my object in writing 'Man's Place in the Universe' was purely scientific, not religious.”<sup>333</sup>

Alfred Russel Wallace, 1903

The collapse of the geocentric model of the universe helped to usher in the modern era.<sup>334</sup> Without a celestial justification for the status quo, new ideologies, politics, and philosophies emerged more easily. Modernity, at its foundation, represented an opening up of all the previous ideologies to challenge.<sup>335</sup> Utilitarianism and classical

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<sup>332</sup> Maria Mitchell, *Maria Mitchell: Life, Letters, and Journals* (Boston: Lee and Shepard, 1896), 121.

<sup>333</sup> Albert Dawson, "A Visit to Dr. Alfred Russel Wallace," *Christian Commonwealth* (1903), <http://people.wku.edu/charles.smith/wallace/S741.htm>.

<sup>334</sup> Kuhn, *The Copernican Revolution*, 2; Toulmin, *Cosmopolis*, 82-87; Guthke, *The Last Frontier*, 47-48.

<sup>335</sup> Jonathan I. Israel, *Enlightenment Contested: Philosophy, Modernity, and the Emancipation of Man, 1670-1752* (Oxford: Oxford University Press, 2006), 1-15.

liberalism challenged the dominant philosophical and political orders. Deism questioned the need for God's active presence in the universe. The French Revolution undermined the belief in the stability of monarchy. For many individuals, these (and many more) radical changes, in part or in whole, represented a dangerous move away from traditional ideas.<sup>336</sup>

Some critics of the post-Copernican transformation employed a rhetorical strategy that sought to return to the stabilizing function of Plato's unity cosmology. This strategy, however, could not simply restore the Aristotelian cosmology of the medieval ages. Galileo's models, combined with the explanatory power of Newton's physics and the increased observational power of new telescopes, meant that no serious scholar could make a defense of many discredited elements of Plato and Aristotle's cosmology.<sup>337</sup> The new science definitively disproved the physical centrality of the Earth and the ethereal, perfect nature of the celestial objects and their orbits. The question of a plurality of worlds, however, had yet to be definitively resolved by science, even though the Copernican revolution made plurality a much more popular position. This chapter examines two case studies of individuals using

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<sup>336</sup> Arthur Versluis, "Antimodernism," *Telos* 137, no. 96 (2006); Israel, *Enlightenment Contested*, IX-X, 10.

<sup>337</sup> Of course, geocentrism remained in the 1800s, just as there remain a few during our own time. In 2007, Robert Sungenis and Robert Bennett released two extensive tomes in defense of geocentrism. These authors organized a conference, to discuss geocentrism, held on November 6, 2010. Robert Sungenis and Robert Bennett, *Galileo Was Wrong: The Church Was Right: The Scientific Case for Geocentrism*, vol. 1 (State Line PA: Catholic Apologetics, 2008); Robert Sungenis and Robert Bennett, *Galileo Was Wrong: The Church Was Right: The Historical Case for Geocentrism*, vol. 2 (State Line PA: Catholic Apologetics, 2008); "Galileo was Wrong," <http://galileowaswrong.com/galileowaswrong/>. If the paucity of geocentrists did not adequately reflect the disrepute of these theories their questionable associations certainly do. I visited the website of Catholic Apologetics, the group founded and currently run by Robert Sungenis, who published the books. The organization's book of the month was notable Holocaust "revisionist" Thomas Dalton's *Debating the Holocaust: A New Look at Both Sides*. "Bellarmine Theological Forum," *Catholic Apologetics International Publishing*, <http://www.catholicintl.com/>.

the unity cosmology in order to argue for absolute values against the relativistic values of modernity.<sup>338</sup>

The first case study examines the famous Anglican philosopher William Whewell (1794-1886). His book *Plurality of Worlds* (1853) ruptured the illusion of plurality consensus by providing a well-argued case for the unity cosmology from a respected intellectual figure. Early in his career, Whewell accepted and even defended the pluralist position. Like Plato, whose dialogues he published in (1861), however, Whewell grew concerned with the ways that pluralism provided an argument against a teleological and perfectible universe. Also like Plato, he saw that a defense of unity could represent a powerful argument against his materialist intellectual opponents, most notably the utilitarians, e.g., Bentham, Mill, and Locke.<sup>339</sup> Whewell, a scientist, did not deny the importance of empirical observation, but advocated a hybrid method that mixed observation with the idealism of Plato and Kant.<sup>340</sup> As discussed below, Whewell viewed the utilitarians as modern-day sophists. In the *Plurality of Worlds* he defends a reworked version of Plato's unity cosmology, which he uses as an argument for absolute values. While Whewell made few converts in the scientific world, the

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<sup>338</sup> William C. Heffernan, "The Singularity of our Inhabited World: William Whewell and A.R. Wallace in Dissent," *Journal of the History of Ideas* 39, no. 1 (1978); Zachary Sayre Schiffman, *On the Threshold of Modernity* (Baltimore: John Hopkins University Press, 1991).

<sup>339</sup> Laura J. Snyder, *Reforming Philosophy: A Victorian Debate on Science and Society* (Chicago: University of Chicago, 2006), 204-321; Cymbre Quincy Raub, "Robert Chambers and William Whewell: A Nineteenth-Century Debate Over the Origin of Language," *Journal of the History of Ideas* 49, no. 2: 294-95.

<sup>340</sup> Richard R. Yeo, "Whewell's Philosophy of Knowledge," in *William Whewell: A Composite Portrait*, ed. Menachem Fisch and Simon Schaffer (Oxford: Clarendon Press, 1991), 191; Menachem Fisch, "A Philosopher's Coming of Age: A Study in Erotetic Intellectual History," in *William Whewell: A Composite Portrait*, ed. Menachem Fisch and Simon Schaffer (Oxford: Clarendon, 1991), 294; Gerd Buchdahl, "Deductivist versus Inductivist Approaches in the Philosophy of Science as Illustrated by some Controversies between Whewell and Mill," in *William Whewell: A Composite Portrait*, ed. Menachem Fisch and Simon Schaffer (Oxford: Clarendon, 1991), 321-22.

dialogue and debate that emerged after his book, revealed the cracks in the plurality consensus and helped erect a rhetorical bulwark against utilitarian ideas.

The second case study investigates Alfred Russel Wallace (1823-1913), the co-discoverer of the theory of evolution via natural selection. Wallace, like Whewell, also tried to revive the unity cosmology as a method to advocate for his political and social beliefs. Wallace deeply opposed capitalism and colonialism, but over time he became more and more convinced that the Darwinian theory he helped discover justified political practices he despised.<sup>341</sup> He sought a scientific counterweight to temper the social implications of orthodox Darwinism and return humanity to a privileged position. In his books *Man's Place in the Universe* (1903) and *The World of Life* (1910) he uses the unity cosmology to achieve this end.

The 1700s saw the collapse of much of the cosmology of Plato, Aristotle, and Aquinas and ushered in a host of radical social changes culminating in the French Revolution and Napoleonic Era.<sup>342</sup> Wallace and Whewell hoped to revive unity, the one aspect of medieval cosmology not definitively disproven by heliocentrism and Newtonian physics. Both believed that scientific paradigms provided an intellectual justification for ethics--and religion--and maintained that only unity could justify absolute values. Whewell and Wallace believed that plurality gave credence to the positions of their opponents, whether or not their opponents made this connection.

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<sup>341</sup> Francis Galton, Charles Darwin's cousin, is credited with founding the social darwinism, understood as concern of differential birthrates between the fit and unfit members of society. Diana B. Paul, "Darwin, Social Darwinism and Eugenics," in *The Cambridge Companion to Darwin*, ed. Johnathan Hodge and Gregory Radick (Cambridge: Cambridge University Press, 2009), 221. This led many individuals to advocate against programs to help the poor as will be discussed later in the chapter.

<sup>342</sup> Peter Gay, *The Enlightenment, An Interpretation: The Rise of Modern Paganism*, vol. 1 (New York: Norton, 1977); Peter Gay, *The Enlightenment, An Interpretation: The Science of Freedom*, vol. 2 (New York: Norton, 1977).

## 4.1 WILLIAM WHEWELL

Whewell's defense of the unity cosmology came as such a shock to his peers. Both David Brewster and Stair Douglas suggest that Whewell's suffering at the death of his wife Cordelia primed him to reject plurality, but Crowe notes that none of his writings provide evidence for this theory.<sup>343</sup> Whewell's drastic change of opinion must have appeared to come out of nowhere, which must have proved a major surprise, not only because of the heterodox nature of his opinion, but also because of the stature of the opinion holder.<sup>344</sup>

By the time he wrote his defense of the unity cosmology in 1853 he had achieved considerable success within the academic world. Whewell held the position of Master at Trinity College in Cambridge on conservative Prime Minister Robert Peel's recommendation to the Queen, was a founding member of the British Association for the Advancement of Science, a fellow of the Royal Society, and a president of The Geological Society.<sup>345</sup> He acquired the nickname the "harmonious blacksmith" from Erasmus Darwin after he saw Whewell respectfully listen, "all ear

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<sup>343</sup> William Whewell, Janet Mary Douglas, and Stair Douglas, *The Life and Selections from the Correspondence of William Whewell* (London: C. Kegan Paul, 1881), 221-22; Crowe, *Extraterrestrial Life Debate*, 305.

<sup>344</sup> "Speculators Among the Stars: Part II," *Littell's Living Age* 8, no. 555 (1855): 73; "Art. II," *British Quarterly Review* 20 (1855); David Brewster, *More Worlds than One: The Creed of the Philosopher and the Hope of the Christian* (New York: Carter & Brothers, 1854).

<sup>345</sup> Laura J. Snyder, "William Whewell," *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/whewell/>.

(not all assent)” at a lecture of Thomas Carlyle.<sup>346</sup> He would eventually become one of the most respected intellectual figures in England, but his rise to prominence did nothing to foreshadow his future public support for unity.

Whewell straddled two major competing intellectual traditions. The empiricist school epitomized by John Locke and David Hume advocated an empiricist approach to knowledge that deemphasized epistemology not grounded in sensation. The idealist school, epitomized by Immanuel Kant and Samuel Taylor Coleridge, believed that true knowledge could be intuited by humanity and that structural limitations severely handicapped an empiricist method. Like Thomas Reid, who greatly influenced his work, Whewell criticized both schools and sought a middle path that drew from both idealism and empiricism.<sup>347</sup> This interest in a hybrid of idealism and empiricism drew Whewell to scientific debates like plurality that blended scientific/empiricist and philosophical/idealist implications and methodologies.

In 1833, Whewell published *Astronomy and General Physics*, a volume for the prestigious *Bridgewater Treatises*, in which he still defended the possibility of plurality. Reverend Francis Henry, Earl of Bridgewater, commissioned the compendium in his 1825 last will and testament for the purpose of collecting the scientific evidence for God. Each of the *Bridgewater Treatises* covered a different scientific field and was written by an expert in that field. The resulting documents represented a, “largely nontechnical, politically conservative, and religiously safe

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<sup>346</sup> Thomas Carlyle and James Anthony Froude, *Reminiscences* (New York: Charles Scribner's Sons, 1881), 434.

<sup>347</sup> Yeo, "Whewell's Philosophy of Knowledge," 191; Snyder, *Reforming Philosophy*, 36-50; Fisch, "A Philosopher's Coming of Age," 294; Buchdahl, "Deductivist versus Inductivist Approaches," 321-22.

compendium of contemporary science.”<sup>348</sup> Given the popularity of plurality and the unadventurous nature of the *Bridgewater Treatises*, one should not be surprised that Whewell’s volume on astronomy and general physics remained open to the idea of plurality

In his treatise, *Astronomy and General Physics* Whewell defends the standard science of the time, which included the high probability of plurality. He writes, “we may thus have in the universe worlds, no one knows how many, no one can guess how varied.”<sup>349</sup> Whewell showed no signs of his later concern that plurality would undermine teleology and ultimately Christianity. In fact, he explicitly denounces this possibility when he says, “*Numbers* [author’s italics] are nothing in themselves; and when we reject the known, but unessential limits of our own faculties, it is quite as allowable to suppose a million millions of earths as one, to be under the moral government of God.”<sup>350</sup> When Whewell later attacked the plurality position, at least one commentator mentioned the irony that one could easily mistake Whewell’s *Astronomy and General Physics* for a work of any number of other pluralist writers of the time.<sup>351</sup>

Although his peers recognized Whewell as an expert on astronomy, he also engaged in a variety of other academic pursuits. Before publishing his attack on plurality, Whewell wrote many important texts on philosophy, religion, and in

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<sup>348</sup> Jonathan R. Topham, "Beyond the 'Common Context': The Production and Reading of the Bridgewater Treatises " *Isis* 89, no. 2 (1998): 241.

<sup>349</sup> William Whewell, *Astronomy and General Physics: Considered with Reference to Natural Theology*, vol. 3, The Bridge Water Treatises (London: William Pickering, 1833), 270.

<sup>350</sup> Ibid., 281-82.

<sup>351</sup> "Speculators Among the Stars.—Part I," *Littell's Living Age* 44, no. 554 (1855): 5.



scientific fields other than astronomy.<sup>352</sup> In fact, between his *Bridgewater Treatise* and *Plurality* Whewell shifted his research focus to question of morality and even thought about leaving Cambridge to take up a parish.<sup>353</sup> One theme emerged across his works: Whewell's prolonged conflict with utilitarian ideas.<sup>354</sup>

Whewell believed utilitarianism had garnered enough power to present a serious challenge to traditional ethics with its focus on sensationalism and materialism. In the fields of ethics, language, and philosophy of science, utilitarian philosophers made great strides. William Paley's *Principles of Moral and Political Philosophy* laid the foundation for philosophers to attack predetermined morality.<sup>355</sup> John Horne Tooke offered a linguistic theory that used etymology to highlight the social constructs behind words like "right," in order to show that morality exists only as a linguistic construct.<sup>356</sup> J.S. Mill championed an empiricist science that claimed experience determined reality.<sup>357</sup> As isolated developments these proved problematic for Whewell; taken together they represented a frontal attack on Whewell's philosophical

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<sup>352</sup> William Whewell, *The Philosophy of the Inductive Sciences: Founded Upon their History*, 2 ed., vol. 1 (London: John W. Parker, 1847); William Whewell, *The Elements of Morality, Including Polity*, vol. 1 (London: John W. Parker, 1845).

<sup>353</sup> Michael Ruse, "Introduction," in *Of the Plurality of Worlds. 1853 A Facsimile of the First Edition with an introduction by Michael Ruse*, ed. Michael Ruse (Chicago: University of Chicago Press, 2001), 11-12.

<sup>354</sup> John Hedley Brooke, "Indications of a Creator: Whewell as Apologist and Priest," in *William Whewell: A Composite Portrait*, ed. Menachem Fisch and Simon Schaffer (Oxford: Clarendon, 1991), 155.

<sup>355</sup> William Paley, *Principles of Moral and Political Philosophy*, seventh ed. (Philadelphia: Thomas Dobson, 1788); Yeo, "Whewell's Philosophy of Knowledge," 499-500.

<sup>356</sup> John Horne Tooke, *Epea Pteroenta or the Diversions of Purley* (London: J. Johnson, 1805); Yeo, "Whewell's Philosophy of Knowledge," 499-500; Andrew R. Cooper, "'Monumental Inscriptions': Language, Rights, the Nation in Coleridge and Horne Tooke," *ELH* 66, no. 1 (1999).

<sup>357</sup> Richard Yeo, "William Whewell, Natural Theology and the Philosophy of Science in Mid Nineteenth Century Britain," *Annals of Science* 36 (1979): 499-500; Elizabeth S. Anderson, "John Stuart Mill and Experiments in Living," *Ethics* 102, no. 1 (1991).

beliefs and a serious implicit threat to the foundations of Christian belief, by supplanting the traditional spiritual order with a deist or material one.

The growing materialism viewed empiricism as the only mechanism to evaluate truth, which posed a challenge to Whewell's philosophical idealism and conservative political beliefs, which went beyond a mere academic question. Utilitarians pushed for measures that would overhaul higher education, shifting the focus from classics and mathematics to politics, economics, and modern philosophy, while decentralizing institutional power.<sup>358</sup> Perry Williams suggests that Whewell connected utilitarian beliefs to the French Revolution and unrest in England, which jeopardized the place of the church and the established social order.<sup>359</sup> Whewell believed that the impetus for these forces of social change began in the academy with the work of the founder of utilitarianism, Jeremy Bentham, and Whewell believed that winning the battle of ideas in academia could help reverse what he saw as negative political developments.<sup>360</sup>

In many ways the debate between Whewell and his philosophical and political opponents parallels Plato's conflict with the sophists. The prevailing historical view held the sophists as dangerous radicals interested in commercialism, skepticism, and

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<sup>358</sup> Perry William, "Passing on the Torch: Whewell's Philosophy and the Principles of English University Education," in *William Whewell: A Composite Portrait*, ed. Menachem Fisch and Simon Schaffer (Oxford: Clarendon, 1991), 132-40.

<sup>359</sup> Ibid., 135; Jonathan Hodge, "History of the Earth, Life, and Man," in *William Whewell: A Composite Portrait*, ed. Menachem Fisch and Simon Schaffer (Oxford: Clarendon Press, 1991), 258-60.

<sup>360</sup> William, "Passing on the Torch," 132-36. The utilitarians in Britain did advocate numerous political reforms, like economic liberalization and church reform. Leslie Stephens, *The English Utilitarians*, vol. 2 (London: Continuum International Publishing Group, 2005), 41-73. Although they aligned with the radicals, they still maintained a more centrist political position than the Chartists with whom they often feuded over strategy. Leslie Stephens, *The English Utilitarians*, vol. 3 (London: Duckworth, 1900), 31-32, 36.

populism, the very beliefs Whewell associated with the materialists of his day.<sup>361</sup> The few positive portrayals of the sophists typically came from liberals interested in their connection with ancient Greek democracy.<sup>362</sup> In the 1850s the liberal historian and utilitarian sympathizer George Grote would defend Protagoras' belief of, "man as the measure of all things," as foundational to good governance and utilitarianism.<sup>363</sup>

Whewell likely agreed with Grote's revised historical narrative, because it made Plato's conflict with the sophists more analogous to the philosophical debates of modern times. He praises Grote, "for having rejected an established system for vilifying and misrepresenting Plato's opponents, the Sophists, and ascribing to them in every thing that they say, Sophistry in its modern English usage."<sup>364</sup> The previous treatment of the sophists had treated them as hucksters with no underlying philosophy beyond their own self-interest.<sup>365</sup> This caricaturing view made the debate between Plato and the sophists uninformative for modern times, because Plato's dialogues show Socrates triumphing over a collection of straw men. With radicals increasingly taking on the mantle of sophists, Whewell was free to cast himself as a modern day Plato.<sup>366</sup>

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<sup>361</sup> Karen E. Whedbee, "Making the Worse Case Appear the Better: British Reception of the Greek Sophists prior to 1850," *Rhetoric & Public Affairs* 11, no. 4 (2008): 608-13; Giovanni Giorgini, "Radical Plato: John Stuart Mill, George Grote and the Revival of Plato in the Nineteenth-Century England," *History of Political Thought* 30, no. 4 (2009): 621.

<sup>362</sup> Whedbee, "Making the Worse Case Appear the Better," 614-22.

<sup>363</sup> Giorgini, "Radical Plato," 643-56; Jarratt, *Rereading the Sophists: Classical Rhetoric Refigured*, xxi, 5.

Some utilitarians were quick to distance themselves from the sophists. John Stuart Mill attacks the sophists, and claims Plato as a utilitarian, on the very first page of his book *Utilitarianism*, "Socrates listened to the old Protagoras, and asserted (if Plato's dialogue be grounded on real conversation) the theory of utilitarianism against the popular morality of the so-called sophist." John Stuart Mill, *Utilitarianism* (Chicago: University of Chicago Press, 1906), 1.

<sup>364</sup> Todhunter, *William Whewell*, 241.

<sup>365</sup> Whedbee, "Making the Worse Case Appear the Better," 608-14.

<sup>366</sup> Even if one accepts that Whewell did hold a positive view of the sophists this only applied to them as an aggregate class. He held Protagoras's ideas in poor regard as I will discuss when I examine his discussion of the "Democritic" philosophers later in the chapter.

As early as 1839, Whewell delivered a lecture that connected his beliefs in absolute morality with Plato's. In this passage he analogized Plato's ancient debates with his conflicts with the utilitarians:

We maintain, with Plato, that reason has a natural and rightful authority over desire and affection; with [Joseph] Butler, that there is a difference of kind in our principles of action; with the general voice of mankind, that we must do what is right, at whatever cost of pain and loss. We deny the doctrine of the ancient Epicureans, that pleasure is the supreme good; of Hobbes, that moral rules are only the work of men's mutual fear; of Paley, that what is expedient is right, and that there is no difference among pleasures except their intensity and duration; and of Bentham, that the rules of human action are to be obtained by casting up the pleasures which actions produce.<sup>367</sup>

Whewell does not mention the sophists by name in this passage, but it is unnecessary. Plato wrote his philosophy in dialogue form, Plato's defense of "reason," "over desire and affection," occurred in debates with the sophists. Whewell contrasts Plato's views with the Epicureans, ancient utilitarians and defenders of the atomist cosmology, and his more recent intellectual opponents Paley, Hobbes, and Bentham.<sup>368</sup>

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<sup>367</sup> William Whewell, *Lectures on the History of Moral Philosophy in England* (Cambridge: Cambridge University Press, 1852), ix-x.

<sup>368</sup> Bentham, Hume, Smith, and Paley all drew from Epicurean ideas to bolster their utilitarian views. J. S. Mill in particular made heavy reference to Epicureanism in his works on utility. Frederick Rosen, *Classical Utilitarianism from Hume to Mill* (London: Routledge, 2003), 172-74.

Whewell analogizes the materialists of his day and the sophists of ancient Greece in the (1861) introduction to his translation of *Protagoras*, in the *Platonic Dialogues*, in a gratuitous peroration

One sentence of [Protagoras'] is attacked by Plato, and is understood by the commentators, as if it meant that we have no knowledge except by sensation. He said that "Man is the measure of all things." It is plain that this may mean that man's faculties are the measure of human knowledge above all things; a very blameless doctrine, as seems to me. And even if the expression means that all our knowledge is derived from sensation, it conveys a doctrine which though, as I conceive, false, is extremely prevalent among many of the most moral, clear-headed, and right-minded persons among ourselves.<sup>369</sup>

The reference to sensationalists likely refers to the growing epistemology of materialism in England. Whewell's charitable claim that the sensationalists make up, "many of the most moral, clear-headed, and right-minded persons among ourselves," suggests he references a group big enough to include Unitarians and Anglican "broad-church" latitudinarians, as well as religious scientists who deployed a materialistic epistemology. Whewell saw many of these individuals as allies on the question of ethics even if they held problematic scientific views, just as Plato agreed with the atomists on many ethical points, but not their cosmology.

In Whewell's mind, the foremost sensationalists of the time were the followers

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<sup>369</sup> William Whewell, *The Platonic Dialogues*, vol. 2 (Cambridge: Macmillan, 1860), 8-9.

of proto-utilitarian philosopher John Locke.<sup>370</sup> He accuses them of giving “exclusive authority of the senses in [an] extreme unmitigated manner” and refers to them as the “sensationalist school.”<sup>371</sup> Again he cast the debate between his more idealist views and the sensationalists in term of the ancients,

[The opponents of pure sensationalism] knew, too, that many of the plausible tenets of the new philosophy were revivals of fallacies which had been discussed and refuted in ancient times. But the advocates of mere experience came on with a vast store of weighty truth among their artillery and with the energy which the advance usually bestows. The ideal system of philosophy could, for the present, make no effectual resistance; Locke, by putting himself at the head of the assault, became the hero of his day.<sup>372</sup>

Whewell argues that the advances in science that began with Galileo, gave renewed credence to the ancient, once discredited ideas of the sensationalists. Whewell suggests that the sensationalists, buoyed by the new scientific paradigm, rushed to revive the materialistic philosophy of the ancient sophists, without properly contending with the arguments of Plato and others.

Whewell probably would not grant the title of “moral, clear-headed, and right-minded persons,” to these extremists of the sensationalist camp. Locke’s followers

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<sup>370</sup> A. P. Brogan, "John Locke and Utilitarianism," *Ethics* 69, no. 2 (1959).

<sup>371</sup> William Whewell, *The Philosophy of the Inductive Sciences: Founded Upon their History*, vol. 2 (London: John W. Parker, 1840), 457-69.

<sup>372</sup> *Ibid.*, 458.

helped provide the intellectual grounding for the political and metaphysical revolutions that Whewell so despised.<sup>373</sup> In the forward to his book he states that he wrote the manuscript for the express purpose of attacking the “ultra-Lockian” position, which provides yet another example of Whewell mixing morality and politics with scientific and epistemological questions.<sup>374</sup>

The theme of Plato-versus-the-Sophists as a historical analogue for Whewell’s intellectual conflict with the utilitarians emerges again in “Influence of the History of Science on Intellectual Education,” which he delivered in 1854, a year after the publication of *Plurality*. Whewell positions himself as a modern day Plato battling the utilitarians’ educational program that lacks an appreciation for absolute values beyond human construction:

The first great attempt made for the improvement of intellectual education, so far as history tells us, was that undertaken and prosecuted with preserving vigor by Socrates and Plato... the teachers whom Socrates and Plato perseveringly opposed – have been habitually called *the Sophists*; ...the education which these teachers professed to give, and frequently gave, was precisely what we commonly mean by a *good education*. It was an education enabling a young man to write well, speak well and act efficiently, on all ordinary occasions, public and private. The moral doctrines which they taught, even according to the most unfavorable representation of them, were no worse than the moral doctrines

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<sup>373</sup> Frederick Denison Maurice, *Moral and Metaphysical Philosophy: Fourteenth century to the French with a Glimpse into the Nineteenth Century*, vol. 2 (London: Macmillan, 1873), 434.

<sup>374</sup> Whewell, *The Philosophy of the Inductive Sciences*, IV.

which are most commonly taught among ourselves at the present day,-- the morality founded upon *utility* [his emphasis]; but many of them repudiated this doctrine as sordid and narrow, and professed higher principles.”<sup>375</sup>

Unlike the materialists generally, whom he equates as having improperly absorbed elements of sophistic epistemology, Whewell directly connects the sophists and utilitarians. Whewell in this passage even goes so far as to suggest that the utilitarianism represents a force more “sordid” than that of the sophists, because at least some of the sophists believed in some form of moral code. Given the then-prevalent historiography, Whewell’s placing the utilitarians below the sophists represented a serious insult.

Whewell makes the connection between his intellectual battle with the utilitarians and Plato’s struggle with the sophists, and like Plato, Whewell engaged his opponents across the spectrum of his work. Whewell followed Plato, too, in emphasizing a strong mathematics education as a bulwark against relativism. The utilitarians and other radical groups sought to shift focus away from math, where they believed scholars could produce little new knowledge, to philosophy where new developments constantly occur. Whewell fiercely opposed this plan, because he felt the eternal truths of math engrained a sense of absolute moral values, whereas the deluge of new developments in philosophy encouraged relativism by demonstrating

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<sup>375</sup> William Whewell, *Influence of the History of Science upon Intellectual Education: A Lecture Before the Royal Institution of Great Britain* (Boston: Gould and Lincoln, 1854).



that what people believe is true today can change tomorrow.<sup>376</sup> Whewell did not passively declare his opposition to the shift away from a mathematics curriculum, but became active in the public debate by writing position papers opposed to the proposed changes. He made the case that the “poll men,” college students who did not graduate with honors and thus did not need to meet all of the university’s rigorous requirements, should have to take math classes.<sup>377</sup> Whewell felt that academia should not reserve mathematics for the elite, because it could steel the general population against the assault of relativism. He also wrote works on ethics, as replacements for William Paley’s utilitarian textbook that was required reading for undergrads.<sup>378</sup> Finally, he publically advocated an inductive scientific method that he believed delegitimized materialism.<sup>379</sup> The span of Whewell’s efforts against materialism, relativism, and utilitarianism reflect Plato’s life long struggle against these forces in his own time.

## 4.2 THE VESTIGES OF CREATION

Despite Whewell’s best efforts, utilitarian thinking continued to gain ground. J.S. Mill wryly observed in 1825 that his writings had become, “the textbooks of the young

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<sup>376</sup> Michael Ruse, "William Whewell: Omniscientists," in *William Whewell: A Composite Portrait*, ed. Menachem and Fisch and Simon Schaffer (Oxford: Clarendon, 1991), 113; William, "Passing on the Torch," 143. Whewell would approvingly tell the story of Plato refusing students who had not studied geometry. Todhunter, *William Whewell*, 213. In *Elements of Morality*, Whewell uses geometry as a foundational metaphor for his ethical system. William Whewell, *The Elements of Morality including Polity*, vol. 1 (London: John W. Parker, 1845), v-x. He hopes physics and mathematics will provide the foundation of a philosophy based on unchanging truths, rather than experiments Whewell, *The Philosophy of the Inductive Sciences*, 427-28.

<sup>377</sup> Fisch, "A Philosopher's Coming of Age," 48; William, "Passing on the Torch," 127-29.

<sup>378</sup> Snyder, *Reforming Philosophy*, 205.

<sup>379</sup> Buchdahl, "Deductivist versus Inductivist Approaches," 312-22, 35; William, "Passing on the Torch," 117-47.

men... at Cambridge.”<sup>380</sup> The publication of *The Vestiges of Creation* (1844), anonymously authored by successful publisher Robert Chambers, however, proved more problematic to Whewell than the decline in math education or the popularity of Mill’s essays.<sup>381</sup> Whewell invested heavily in the idea that science and math revealed eternal immutable truths, which would both prove God’s design and highlight appropriate universal ethics. *The Vestiges of Creation* outlined a universe where life, planets and stars all emerged from a process of blind, impersonal evolution. In effect, it stole the appeal to the eternal cosmos that undergirded Whewell’s entire rhetorical attack on the utilitarians, by making the fixed and divine, appear mutable and mechanical.

*Vestige’s* evolutionary model harkens back to the cosmology of the Atomists, where the universe emerges from chaos by means of random chance. Chambers offers a modified account of Emanuel Swedenborg’s nebular hypothesis, which argued nebulae (cloud-like astronomical bodies) could not be reduced to stars by further magnification of telescopes.<sup>382</sup> Instead, these clouds of astronomical dust engaged in a process of development whereby natural forces turned them into solar systems like our own. Once these solar systems had formed, life would develop in an evolutionary-like fashion (what Chambers called transmutation of species). This cosmogony went beyond even the deistic interpretations of the creation of the universe in removing the role of God.

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<sup>380</sup> John Stuart Mill to John Ramsey McCulloch, 18 Aug. 1825, quoted in Alexander Bain, *James Mill: A Biography* (London: Longmans, Green and, Co., 1882), 292.

<sup>381</sup> Robert Chambers, *Vestiges of the Natural History of Creation* (London: John Churchill 1845).

<sup>382</sup> James A. Secord, *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of Vestiges of the Natural History of Creation* (Chicago: University of Chicago, 2000), 50.

The radical nature of the book and its success must have proved shocking to Whewell. *Vestiges* became a sensation capturing the attention of the educated public, selling 40,000 copies in Britain alone. It became a fashionable subject at parties, a popular item charged out at libraries and a major source of ire for conservative theologians and academics, who wrote pamphlets and preached sermons about the dangers of the book.<sup>383</sup> Ultimately *Vestiges* would play a significant role in setting groundwork for Darwin's evolutionary theory.<sup>384</sup>

Anticipating the controversy and inevitable accusations of atheism, Chambers attempted an explanation of why the impersonal cosmology he advocated did not oppose Christian theology.<sup>385</sup> He also made a series of rhetorical moves to hide the radical nature of his thesis, such as using family metaphors to explain complicated scientific ideas in way that seemed less threatening and quoting respectable sources, including a response to Whewell's *Bridgewater Treatise* by respected scientist Charles Babbage.<sup>386</sup> Chamber's private correspondence suggests that he carefully calculated *Vestiges'* deferral to the religion in order to avoid the censure that had fallen upon other radical books.<sup>387</sup>

Despite these moves to harmonize his scientific beliefs with prevailing morality, Chambers likely welcomed the possibility that his cosmology would call into question the current social order. He engaged in radical politics and may have

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<sup>383</sup> Ibid., 2,3, 130-34, 38-40

<sup>384</sup> Ibid., 39.

<sup>385</sup> Chambers, *Vestiges*, 25-26, 155-59, 384-86.

<sup>386</sup> Secord, *Victorian Sensation*, 101-03, 07, 09.

<sup>387</sup> Ibid., 103.

abandoned his earlier Christian religious views.<sup>388</sup> He surrendered much of his own share of the *Vestiges*' sales in order give away free books and pushed for a cheap edition to reach a mass audience, suggesting that he wanted to maximize the political and social impact of his book.<sup>389</sup> The anonymous authorship of the text, however, hid the source of these political motives from the wider public.<sup>390</sup>

Even without knowledge about the author, Whewell understood the danger of *Vestiges*, because he had long connected science with morality. Whewell initially refused offers to respond in review form, because he did not want to raise the profile of the book with his response.<sup>391</sup> He eventually acquiesced to a request to respond and wrote *Indications of the Creator* (1845), a collection of parts of his previous writings that he believed refuted the *Vestiges*.<sup>392</sup> The text makes it clear that Whewell did not take the author of the *Vestiges* at his word and he attacks the nebular hypothesis for trying to supplant religion:

Innumerable questions of the same kind might be asked, and the conclusion to be drawn is, that every new physical theory which we include in our view of the universe, involves us in new difficulties and perplexities, if we try to erect it into an ultimate and final account of the existence and arrangement of the

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<sup>388</sup> Ibid., 85, 89-90. John M. Lynch argues that Chamber's never abandoned his Christian faith.

John M. Lynch, *'Vestiges' and the debate before Darwin*, vol. 6 (Bristol, England: Thoemmes, 200), xxi.

<sup>389</sup> Secord, *Victorian Sensation*, 125, 51. Chambers' effort to push for mass readership over financial profit reflects a "social sense" model of authorship that was not uncommon during the period. Ronald J. Zboray and Mary Saracino Zboray, *Literary Dollars and Social Sense: A People's History of the Mass Market Book* (New York: Routledge, 2005), xii-xxi.

<sup>390</sup> Chamber's anonymity breaks with the prevalent practice of anonymous texts because of the depth of secrecy. It was rare that a text was really anonymous, in that the author was typically known by at least some circles. Chamber's achieved a "deep" anonymity. Secord, *Victorian Sensation*, 19-20.

<sup>391</sup> Richard Yeo, "Science and Intellectual Authority in Mid-Nineteenth-Century Britain: Robert Chambers and 'Vestiges of the Natural History of Creation'," *Victorian Studies* 28, no. 1 (1984): 13.

<sup>392</sup> Snyder, *Reforming Philosophy*, 186.

world in which we live. With the evidence of such theories, considered as scientific generalizations of ascertained facts, with their claims to a place in our natural philosophy, we have here nothing to do. But if they are put forwards as a disclosure of the ultimate cause of that which occurs, and as superseding the necessity of looking further or higher; if they claim a place in our Natural Theology, as well as our Natural Philosophy; we conceive that their pretensions will not bear a moment's examination.<sup>393</sup>

The term natural theology refers to the belief that the structure of the universe reflects the divine nature of God. Whewell accuses the *Vestiges* of trying to supplant God as the structuring force of cosmos with a scientific explanation.

Going back to his volume of the Bridgewater Treatises, Whewell had resisted any attempts to undermine natural theology. He wrote, "We may thus, with the greatest propriety, deny to the mechanical philosophers and mathematicians of recent times any authority with regard to their views of the administration of the universe."<sup>394</sup> A mechanized worldview makes its holder, "more than common men, liable to miss the road to truths of extreme consequence."<sup>395</sup> By "truths of extreme consequence," Whewell refers to religion, which means that the mechanized scientific framework threatens religious belief.<sup>396</sup> Although Whewell elsewhere says that the nebular

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<sup>393</sup> William Whewell, *Indications of the Creator: Extracts, Bearing upon Theology, from The History and Philosophy of the Inductive Sciences* (London: John W. Parker, 1845), 18, 19.

<sup>394</sup> Whewell, *Astronomy and General Physics*, 334.

<sup>395</sup> *Ibid.*, 338.

<sup>396</sup> This fits within Whewell's broader resistance of mechanized views of nature. Michael Ruse, "The Relationship between Science and Religion in Britain, 1830-1870," *Church History* 44, no. 4 (1975).

hypothesis does not necessarily conflict with Christianity, his suggestion that it could undermine natural theology indicates that he held deep concerns about the *Vestiges*.<sup>397</sup>

Whewell closes the book with a discussion of the eternal, god-derived nature of good and evil. This appeal to universal and transcendental truth follows in the mold of previous Whewellian attacks on utilitarian social thought.<sup>398</sup> Whewell's inclusion of this passage at the end of a scientific response to the nebular hypothesis suggests he understands the potential political implications of Chambers' cosmology. Whewell, like Chambers, recognized that cosmology could play an enormous role in shaping the political environment. He viewed the *Vestiges* as a scientific defense of the political and philosophical views of John Locke and his materialist allies and used his response to attack Lockean ideas.<sup>399</sup> The way Whewell's discussion of the *Vestiges* spills over to deal with philosophical concerns foreshadows how he uses unity as a foundation to discuss metaphysical issues in *Plurality*.

In the contest for the dominant cosmology, however, Chambers continued to take a commanding lead. Whewell's work, *Indications of the Creator*, did little to stem the popularity of *Vestiges*. The third edition of the *Vestiges* sold out almost immediately and writers in the popular press continued to write positive reviews, eclipsing the response of Whewell.<sup>400</sup> As the work continued to gain popularity, Whewell marveled at how the *Vestiges* achieved a success that "No really

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<sup>397</sup> Whewell, *Indications of the Creator*, 17-19.

<sup>398</sup> Ibid., 167-68.

<sup>399</sup> Raub, "Robert Chambers and William Whewell," 292-95.

<sup>400</sup> Secord, *Victorian Sensation*, 231.

philosophical book could have had.”<sup>401</sup> The success of Chamber’s hybrid work of cosmology, politics, religion, despite vicious attacks by the scientific community, foreshadows Whewell’s mimicry of Chamber’s popular style in *Plurality*.<sup>402</sup>

As Whewell spent more time and effort on the philosophical difficulties posed by *Vestiges*’ success, he began to connect the problematic messages in *Vestiges* to the broader plurality thesis.<sup>403</sup> Both gave credence to materialism and decentralized humanity. Given this view, the popularity of plurality made things look bleak for the success of Whewell’s philosophical and religious views. He claims to have written *Plurality* with the hope that it “might have some value as a strong case exactly opposed to [the *Vestiges*].”<sup>404</sup> Since *Vestiges* did not deal primarily with the question of plurality, this line suggests a more fundamental attack on the philosophical underpinning of the book.

Before publishing the *Plurality of Worlds*, Whewell sent drafts to intellectuals whose opinions he respected. When his friend Stephen James wrote him that he should

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<sup>401</sup> William Whewell to Richard Jones, 18 July 1845, in Isaac Todhunter, *William Whewell, D.D., Master of Trinity College, Cambridge; An Account of his Writings with Selections from his Literary and Scientific Correspondence*, vol. 2 (New York: Johnson Reprint Corporation, 1970), 327.

<sup>402</sup> In *Plurality*, Whewell moves away from the overly scientific prose of *Indications* and begins by interacting with the work of Thomas Chalmers. Given the popular success of Chalmers’ lectures this move was likely designed in part to draw in lay readers. We know from his lectures to commoners and his development of popular science textbooks that Whewell had both the interest and capability to reach out to nonacademic audiences.

<sup>403</sup> Laura J. Snyder, “‘Lord only of the ruffians and fiends’? William Whewell and the plurality of worlds debate,” *Studies in History and Philosophy of Science* 38 (2007): 586-87; Ruse, “Introduction,” 12-13; John Hedley Brooke, “Natural Theology and the Plurality of Worlds: Observations on the Brewster-Whewell debate,” *Annals of Science* 34, no. 5 (1977); Ruse, “The Relationship between Science and Religion in Britain,” 517. Michael Crowe attributes the change to Whewell’s growing belief that Christianity conflicted with plurality. He tries to distinguish this from the thesis that the *Vestiges* was responsible for Whewell’s defense of unity, but I believe that these are complementary arguments. Crowe, *Extraterrestrial Life Debate*, 265-67.

<sup>404</sup> William Whewell to J. D. Forbes, February 1854, in Todhunter, *William Whewell*, 400.

focus more on the scientific arguments and less on the religious elements, Whewell replied

With regard to the relation between the Christian scheme and the Plurality of Worlds, I must remark that it is by no means introduced for the first time in pages 246 and 247. On the contrary, *the difficulties* belonging to that relation are the starting point of my whole essay... the topic cannot be excluded for it is in fact *the* topic of my essay.<sup>405</sup>

Whewell's change of heart on unity and his connection of it with absolute values in *Plurality* suggests he had concluded that society needed a new cosmology (or rather a return to an old cosmology) to combat utilitarianism, one which emphasized the eternal, designed nature of creation.<sup>406</sup>

### 4.3 PLURALITY OF WORLDS AND THE UTILITY DEBATE

In 1853, Whewell published the *Plurality of Worlds*, in which he argues that Earth serves as the only habitation of intelligent life in the universe. The book represents a

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<sup>405</sup> William Whewell to Stephen James, 25 October 1853 in *ibid.*, 392.

<sup>406</sup> Snyder suggests that Whewell had never really committed to the plurality thesis in his *Bridgewater Treatises*. Under this interpretation of history, Whewell never radically changed his mind, but instead moved towards unity over time. This distinction does not make much of a difference for my argument, in either case, Whewell eventually came to the conclusion that unity helped counter materialism and thus embraced it. Snyder, "Lord only of the ruffians and fiends," 584-85.



strong rebuke not only to the *Vestiges*, but the plurality thesis in general. A significant part of the book reads in a dense scientific prose, which elides its function as a philosophical argument. A close reading of *Plurality of Worlds*, however, reveals that Whewell rather explicitly targets utilitarianism in a way meant to be accessible to a wide audience. Whewell's book, published by J.W. Parker, continued the trend of cosmological works becoming bestsellers, going through numerous editions.<sup>407</sup> Amazingly, direct, published responses to *Plurality of Worlds* included over eighty articles and twenty books.<sup>408</sup>

If one only read the middle chapters of *Plurality of Worlds*, he or she would confront a rather dry scientific manuscript, in which Whewell exposes many of the weaknesses of the plurality position. Pluralists following the Copernican revolution rely heavily on arguments based in analogy:

- A. Earth is a Planet
- B. Earth has life
- A. Mars is a Planet
- B. Thus Mars should have life.

The argument suggests that because other planets have qualities similar to Earth that one should assume they are inhabited. Whewell points out numerous dissimilarities between the other planets and Earth that call into question such an

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<sup>407</sup> A WorldCat review of books the firm published reveals that they had published Whewell's work *English Moral Philosophy* the previous year, as well as other scientific treatises. They also published in 1851 John Stuart Mill's *A System of Logic, Ratiocinative and Inductive, Being a Connected View of the Principles of Evidence, and the Methods of Scientific Investigation*. In the future they would publish important works like Coventry Patmore's megahit *The Angel in the House*. On Parker, see Ruth Richardson, *The Making of Mr. Gray's Anatomy* (New York: Oxford University Press, 2008), 60-92—Whewell's relationship to the publisher is discussed on 65-67.

<sup>408</sup> Crowe, *Extraterrestrial Life Debate*, 300. My research has revealed more articles as detailed later in the chapter.

analogy. The pluralists believed that the presence of so many planets would represent a waste of space. Whewell makes the rather clever case that wide swaths of time existed before humans came into existence, but that time does not constitute a waste.<sup>409</sup> He also argues that nature has lots of waste, like embryos that fail to emerge.<sup>410</sup> All of these arguments do work to undermine the central analogy at the heart of the pluralist case.

William C. Heffernan claims that from a scientific perspective Whewell's arguments demolished the pluralist position.<sup>411</sup> Heffernan makes a compelling argument, as many of the pluralist arguments lacked strong empirical evidence or conformed to any kind of rigid methodological basis. And, of course, history has since vindicated Whewell's position with humanity's space exploration having yet to confirm any life (much less intelligent life) on the planets in our solar system. Given the lack of methods to verify the claim of plurality empirically, however, it is unsurprising that Whewell could poke so many holes in the pluralist case. Plurality had become the dominant scientific paradigm, to the point where many individuals took it for granted, resulting in poor scholarship. The question should not focus on how strong Whewell's arguments were *against* the pluralist position, but how strong they were *for* the unity position. This focus will highlight assumptions and biases within Whewell's arguments, just as he has done with the pluralists.

Whewell went beyond attacking the case for pluralism to argue strenuously for a unity cosmology. Heffernan chooses to view Whewell primarily as a

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<sup>409</sup> Whewell, "Of the Plurality of Worlds," 52-105.

<sup>410</sup> Ibid., 224.

<sup>411</sup> Heffernan, "The Singularity of our Inhabited World."

“methodological dissenter,” rather than a “proponent... of a negative answer to the age-old question of life elsewhere.”<sup>412</sup> He acknowledges, but then downplays Whewell’s philosophical and religious motivations. Whewell’s bold thesis that no intelligent life exists in the universe frequently put him on scientific ground as shaky as the pluralist. Philosophy and religion motivated Whewell’s antipluralist beliefs far more than the scientific evidence against plurality.

Whewell faces a difficult rhetorical task; he wants to defend the idea that plurality undermines humanity’s importance by making it insignificant in the context of the universe. The problem occurs, because, as mentioned at the end of the last chapter, the only other individuals making this argument were deists like Thomas Paine. By contrast, religious men, like Thomas Chalmers, had defended plurality as consistent, if not required, by Christianity.<sup>413</sup> Whewell wanted to defend the premise that plurality renders Christianity suspect and humanity insignificant (and the reverse that unity made Christianity true and humanity important), but combine it with a scientific case against plurality and for unity. Whewell agreed with Chalmers’ religious conclusion, but also with the implications of unity put forth by the deists.

The beginning of *Plurality* navigates this tension by slowly building the connection between unity and religion through a dialogue with Chalmers’ work. Chalmers’ first lecture on the connection between plurality and Christianity begins with a quote from Psalms,

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<sup>412</sup> Ibid., 83.

<sup>413</sup> Whewell’s letters reveal that he had Chalmers in mind when he wrote the first chapters of his book. William Whewell to James Stephen 13 September 1853 in Todhunter, *William Whewell*, 380-81.

When I consider thy heavens, the work of thy fingers, the moon and the stars,  
which thou hast ordained; What is man, that thou art mindful of him? And the  
son of man, that thou visitest him? – Psalm viii. 3, 4.<sup>414</sup>

Chalmers argues that the size of the universe does render humanity small in the grand scheme of things, but that God ultimately redeems humanity's value because, "I am as much known to him as if I were the single object of his attention."<sup>415</sup> He laments that "infidels" have turned the Psalmist's wonder at the size of the universe (taken in the modern scientific context of plurality) as an argument against Christianity.<sup>416</sup> Although he does not mention any infidels by name he almost certainly refers to Thomas Paine, given the popularity of his work.

In a nod to Chalmers, Whewell also begins his book by focusing on the question posed by the Psalmist,

The earth is not at rest, with the celestial luminaries circulating above it, as the ancients believed, but itself moves in a circle around the sun, in the course of every year; and the other planets also move around the sun in like manner, in circles, some within and some without that which the earth describes. This collection of planets, thus circulating about the sun, is the Solar System: of which the earth thus forms a very small part. Jupiter and Saturn are much larger than the earth. Mars and Venus are nearly as large. If these be inhabited, as the

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<sup>414</sup> Chalmers, *A Series of Discourses*, 17.

<sup>415</sup> Ibid., 53.

<sup>416</sup> Ibid., 53-54.

Earth is, which the analogy for their form, movements and conditions, seems to suggest, the population of the earth is a very small portion of the population of the solar system. And if the mere number of the subjects of God's government could produce any difficulty in the application of his providence to them, a person to who this view of the world which we inhabit had been disclosed, might well, and with far more reason than the Psalmist, exclaim, 'Lord, what is man, that thou art mindful of him? the inhabitant of this Earth, that thou regardest him?'<sup>417</sup>

At this point in the text Whewell has not made it clear his own answer to the Psalmists rhetorical question in light of the new scientific belief in plurality, although this passage does suggest it raises problems for religion. Whewell quotes the Psalmist several more times in the first chapter without assenting to what Chalmers called the "infidel" position. By the end of the book, however, it becomes obvious that Whewell fears plurality renders humanity insignificant and Christianity absurd.<sup>418</sup>

Early in the text Whewell seems leery of scaring off readers by defending even part of the deist argument against Christianity. In order to prevent guilt by association, he requests that the audience read his objection to plurality (spoken through the words of the Psalmist) as "difficulties of religious men, [rather] than as objections of irreligious men."<sup>419</sup> This suggests he wants the audience to read his book as a dialogue with men like Chalmers, rather than a defense of deists like Paine. Whewell

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<sup>417</sup> Whewell, "Of the Plurality of Worlds," 5.

<sup>418</sup> Ibid., 1, 5, 8, 15.

<sup>419</sup> Ibid., 22.

hides behind the Psalmist's rhetorical question, but it is clear that he agrees with the "infidels'" second premise, that plurality undermines humanity's place in the universe. Whewell attempts to revive the intuitive connection between plurality and human insignificance in the face of objections from individuals like Chalmers. Whewell's decision to begin his book with a defense of the deist objection to Christianity signals to readers that they should not interpret *Plurality of Worlds* as simply a scientific text. Instead, the question of cosmology has enormous bearing on the place of humanity in the universe.

#### 4.4 PLURALITY OF WORLDS: *TIMAEUS*

Whewell's connection of unity as a necessary condition for Christianity harkens back to Plato and Aquinas. The evidence suggests this connection does not occur as a coincidence and that Whewell drew heavily from Plato's cosmological rhetorical strategy as a model. Early in the final chapter he denotes the two sides in the debate, "The two doctrines which we have here to weigh against each other are the Plurality of Worlds, and the Unity of the World."<sup>420</sup> What the term "Plurality of Worlds" meant would have been clear enough to general readers in the time it was published. In fact, Whewell choose to name his work the "Plurality of Worlds," even though he argued against the proposition, precisely because of the term's familiarity.<sup>421</sup> In order to understand the term "Unity of the World," however, readers would have needed to

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<sup>420</sup> Ibid., 248.

<sup>421</sup> William Whewell, *Of the Plurality of Worlds: An Essay Also, A Dialogue on the Same Subject* (London: Longmans, Green, Reader, and Dyer, 1867), 339.

understand where Whewell borrowed the term.

Although Whewell never explicitly makes the connection for the readers, it is likely that he took the term from the *Timaeus*. Here is a passage from Whewell's translation of the *Timaeus* where he connects the term unity with Plato,

Of one: since it is made after the model. For that [model] which includes all Intelligible animals, cannot exist along with a second. For then, [to have a model really including all,] we must have one including those two, of which they would be parts; and then the universe would be rightly made after the likeness of this Including [model], not of those Included. And thus that the world, by its unity, should resemble the supremely perfect animal [or living thing], the Creator did not make either two or an infinite number of worlds; but, on the contrary, this world is and ever shall be the one created world.<sup>422</sup>

Whewell's clear familiarity with the *Timaeus*, as well as Whewell's use of the term "unity" leaves little doubt that the idea that Earth's singularity as the foundation for teleology emerges from it. In a letter to Herschel, he describes the Greek classics as "essential... [to] the liberal education of the present age" and claims,

To suppose that man will ever become, in these respects, independent of the history and antiquities of literature, seems to me to be equivalent to supposing that he will cease to keep his footing in the path of intellectual progression, of

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<sup>422</sup> William Whewell, *The Platonic Dialogues: For English Readers*, vol. 3 (Cambridge: Macmillan, 1861), 357, 58.

advancing civilization, of the mind and feelings, which began with the philosophical and poetical age of Greece.<sup>423</sup>

In the years prior to writing *Plurality of Worlds*, Whewell made a transition from a Kantian to a Neo-Platonist, which gives further credence to his being deeply familiar with Plato's major dialogues, like the *Timaeus*.<sup>424</sup> In the year he published *Plurality*, Whewell responded to a friend's request to give a lecture by saying, "The only subject on which I could lecture with any satisfaction is Socrates and Plato, of whom my thoughts are full, and likely to be so for the next year."<sup>425</sup> This indicates that Whewell had focused his attention on Platonic ideas when he wrote the book. The clearest signs that the *Timaeus* influenced Whewell come from the text of *Plurality* itself.

Whewell adopts Plato's and Aquinas' notion that completeness represents a critical component of perfection. Thus, only a singular inhabited world could be perfect, whereas, plurality made each planet and its inhabitants imperfect. Whewell writes in *Plurality*, "instead of manufacturing a multitude of worlds on patterns more or less similar, He has been employed in one great work, which we cannot call imperfect, since it includes and suggests all that we can conceive of perfection."<sup>426</sup> Just as in Plato's *Timaeus* and the Thomistic cosmology of the middle ages, humanity's singularity provides the only possibility for its perfection.<sup>427</sup> This

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<sup>423</sup> William Whewell to William Herschel, 9 April 1836, quoted in Todhunter, *William Whewell*, 233-36.

<sup>424</sup> Ruse, "William Whewell: Omniscientists," 113-14.

<sup>425</sup> William Whewell to James Garth Marshal, 19 August 1854 quoted in William Whewell and Janet Mary Douglas, *The Life and Selections from the Correspondence of William Whewell*, 2 ed. (London: Kegan Paul and Trench, 1882), 436.

<sup>426</sup> Whewell, "Of the Plurality of Worlds," 243.

<sup>427</sup> Whewell continues the post Copernican practice of associating perfection with our habitable Earth, rather than the ancient tradition of viewing the plurality of worlds in terms of separate universes. Some



perfection represents a counterargument to utilitarian relativism, by pointing to the possibility of transcendent values beyond the human senses. In this way Whewell recycles Plato's arguments against the sophists, a tactic that becomes clearer later in the text.

Whewell devotes a section of his book to Plato's notion of ideal knowledge, as opposed to the relativistic thinking of what he calls the "Democritic" philosophers. Whewell says that the Democritic philosophers believe that truth does not exist independently from humanity, but instead that all knowledge derives from human minds.<sup>428</sup> If one views *Plurality of Worlds* as a purely scientific text on the structure of the cosmos, the discussion of epistemology appears out of place. If one reads Whewell's book as a defense of absolute values, however, the discussion of epistemology fits. Like Plato's *Timaeus*, Whewell's *Plurality of Worlds* uses cosmology as a bulwark against relativism. The unity of the world provides justification for Whewell's belief in absolute ideals over the relativism and materialism of his opponents.

The origin of the term "Democritic" philosophers helps support this view. In his later supplement to the original text, Whewell explain that he borrowed the term from Richard Owen, who in turn borrowed it from Ralph Cudworth.<sup>429</sup> Cudworth places Democritus, Leucippus, and Protagoras under the banner of Democritic philosophers. The term "philosopher" is important, because contrary to most

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philosophers, like Immanuel Kant, maintained the idea that the unity (of the universe) connected with perfection while believing in a plurality of inhabited planets. Andrew Norris Carpenter, "Kant's Earliest Solution to the Mind/Body Problem" (PhD diss., University of California at Berkeley, 1998), 197-200.

<sup>428</sup> Whewell, "Of the Plurality of Worlds," 249-50.

<sup>429</sup> Whewell, "A Dialogue on the Plurality of Worlds," 35, 36. All page numbers from this book are from the original first edition, not Ruse's updated page numbers.

historians today, Cudworth does not believe that Democritus and Leucippus founded atomism. He argues that the “physiology” of atomism predates Democritus and Leucippus. In Cudworth’s reading of history the Democritic philosophers connected the science of atomism with the philosophy of atheism and in Protagoras’ case “scepticism and atheism.”<sup>430</sup>

Cudworth believes Democritic philosophy did not follow from atomistic science, but it is clear from Whewell’s work that he disagrees.<sup>431</sup> Whewell’s use of the term “Democritic philosopher” means that he likely accepts Cudworth’s view of the Democritus, Leucippus, and Protagoras as atheists and moral relativists. Unlike Cudworth’s approach of trying to harmonize atomism with religion and morality, however, Whewell takes the opposite approach and uses unity to answer the scientific foundation of the Democritic philosophers’ beliefs. Since plurality represents a foundational tenet of the atomism, unity would disprove it and the atheists and relativistic ideas that emerged from it. This mirrors the strategy he takes to the heretical argument from plurality earlier in the book, where unlike Chalmers, Whewell does not explain the compatibility of plurality with Christianity, but denies plurality. By accepting the Democritic philosophers’ perspective that atomism proves atheism and relativism, then the opposite must hold true, with unity proving Christianity and moral absolutes.<sup>432</sup>

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<sup>430</sup> Ralph Cudworth, *The True Intellectual System of the Universe: The First Part Wherein All the Reason and Philosophy of Atheism is Confuted, and its Impossibility Demonstrated*, 2 ed. (London: J. Walthoe, 1743), 11-12, 17.

<sup>431</sup> *Ibid.*, 12.

<sup>432</sup> It is also worth mentioning that Whewell references J. S. Mill directly in his addendum, which lends further credence to the idea that his initial work had him in mind. Whewell, "A Dialogue on the Plurality of Worlds," 40-41.

Whewell's belief in the transcendental disposition of ideas helps shape his view of what forms intelligent aliens could take and in turn provides another argument against plurality. Whewell argues that any intelligent alien race "must have had their Pythagoras, their Plato, their Kepler, their Galileo, their Newton." While he does indicate that any speculation about this is "purely imaginary and arbitrary," his imposition of a particular pathway for knowledge appears equally arbitrary.<sup>433</sup> Whewell believes intelligence must mirror humanity, because of his belief in the absolute nature of knowledge, "The Ideas according to which man builds up his knowledge, are emanations of the archetypal Ideas according to which the work of creation was planned and executed."<sup>434</sup> Advancement, whether intellectual or moral, must proceed along a given pathway because it slowly uncovers absolute truth. Relativistic science, morality, and religion strike at the heart of his philosophical ideals. He claims humanity's knowledge intertwines with our cosmic purpose, saying, "man's moral progress is a progress towards a likeness with God."<sup>435</sup> Absent the divine teleological path, humanity would live no different from animals. This means that any intelligence must have been inspired by the same divine teleology.

Whewell does not allow for the possibility of an alien intelligence that exhibits characteristics of true "alienness." Instead, he presents a stark dichotomy; aliens must be humans that exist on another planet or, as I will show below, animals incapable of any intelligent thought. He derides the presence of humans as a "fairy tale" and does not concern himself with the presence of non-intelligent aliens. Humanity represents

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<sup>433</sup> Whewell, "Of the Plurality of Worlds," 37.

<sup>434</sup> Ibid., 287.

<sup>435</sup> Ibid., 293.

the standard of excellence that ultimately provides value to the universe. Aliens must either mirror humanity's progress or be mindless brutes, disconnected from God.

The possibility of alien animals does represent a significant change from Plato's *Timaeus*. Plato argues that Earth represents the only habitable planet for any form of mortal life. Whewell's cosmology allows for the possibility of animal life in space as long as these animals do not live under a "moral law."<sup>436</sup> Plato disallowed habitable planets because his cosmology's defense of teleology went beyond the absence of life in the universe. Earth's physical centrality, as well as the orderly movement of celestial objects also played important parts in the *Timaeus*. Plato's planets could not host life, because they served as exemplars of "being," eternally stable models for how to live a good life. Whewell writes after the Copernican revolution, where the scientific consensus agrees with the heliocentric model and the orbits of the planets and comets are known to be erratic. This change in the scientific paradigm removed the need to make the planets inhabitable to any form of life.

Whewell's unity cosmology relies on the one part of Plato's cosmology that had not been scientifically disproven, the absence of intelligent life on other planets. Whewell allows for the possibility of animal life, because he does not see animals as posing a challenge to a human-centered teleology:

As we have said, we have no insuperable difficulty in conceiving other parts of the Universe to be tenanted by animals. Animal life implies no progress in the species.... Progress implies, or at least suggests, a beginning and an end. If the

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<sup>436</sup> Ibid., 30.

mere existence of a race imply [sic] a sustaining and preserving power in the Creator, the progress of a race implies a guiding and impelling power; a Governor and Director as well as a Creator and Preserver. And progress, not merely in the exercise of bodily faculties, but in the exercise of mental faculties, in the intellectual condition of a portion of the species, still more implies a special position and character of the race; which cannot, without great license of hypothesis, be extended to other races; and which, if so extended becomes unmeaning, from the impossibility of our knowing what is progress in any other species;--from what and towards what it tends.<sup>437</sup>

For Whewell, animal life may be the product of God's creation, but he denies animals receive God's special guidance. In other words, just as the discovery of a new species of mollusk would not threaten humanity's place in the cosmos, nor should the discovery of that mollusk on Mars.

Whewell's dismissal of the value of animal life as threatening to humanity's special status in the universe represented a part of his reaction to utilitarianism.<sup>438</sup> The belief that animals deserved moral consideration represented one of the tenets of utilitarianism, which stemmed from Jeremy Bentham's belief that pain and pleasure operate as the proper metric of calculating just action.<sup>439</sup> Whewell's rejection of

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<sup>437</sup> Ibid., 35-36.

<sup>438</sup> Whewell quotes Bentham's argument for respecting the pleasure and pain of animals as a *reductio ad absurdum* against the entire philosophy of utilitarianism. J. S. Mill takes him to task for this move. John Stuart Mill, "Whewell on Moral Philosophy 1852," in *The Collected Works of John Stuart Mill*, ed. John M. Robson (Toronto: University of Toronto Press, 1985).

<sup>439</sup> The utilitarian concern for animals can be seen as the fringe element of a broader movement towards more liberal treatment of classes previously believed unworthy of consideration. Thomas L. Haskell, "Capitalism and the Origins of the Humanitarian Sensibility: Part 1," *The American Historical Review*

utilitarianism included a specific refutation of this proposition. For Whewell, the human capacity for reason and moral judgment represents the crucial distinction between humans and animals. He believed anything that blurred the distinction would justify utilitarianism.<sup>440</sup>

The possibility of alien animals (as opposed to aliens with human level intelligence or beyond), did not threaten Whewell's argument against utilitarianism. Whewell's anthropocentrism prevented him from seeing animals as worthy of consideration. He argued that the earth's status as the home of a "World of Mind" makes it more valuable, "than thousands and millions of stars and planets, even if they were occupied by a myriad times as many species of brute animals as have lived upon the earth since its vivication."<sup>441</sup> Whewell makes explicit what implicitly underlined Medieval concerns with plurality, the presence of human-like intelligence. Alien intelligence would call into question humanity's special status, both philosophically and religiously.

While the middle of *Plurality of Worlds* reads as a rather dry scientific treatise, the ethical implications Whewell outlines in the introduction and conclusion make clear his philosophical program. And while Plato left no clear primary documentation of his motivations for writing the *Timaeus*, Whewell's letters suggest he consciously deployed the strategy of linking scientific cosmology and ethics. When Sir James Stephen, the Regius Professor of Modern History at Cambridge, read an early draft of the manuscript he suggested Whewell remove the discussion of religion and ethics to

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90, no. 2 (1985): 339-61; Thomas L. Haskell, "Capitalism and the Origins of the Humanitarian Sensibility: Part 2," *The American Historical Review* 90, no. 3 (1985): 547-66.

<sup>440</sup> Brooke, "Indications of a Creator," 155; Snyder, *Reforming Philosophy*, 250-51.

<sup>441</sup> Whewell, "Of the Plurality of Worlds," 37, 244.

focus on the science. As previously mentioned, Whewell responded that he had written the book precisely to make the religious and moral arguments, “the topic cannot be excluded; for it is in fact *the* topic of my essay.”<sup>442</sup> Whewell wrote *Plurality of Worlds* not to make a scientific point, but a religious and philosophical one.

Most importantly, Whewell’s confidence in unity emerged from his philosophical and religious beliefs, rather than his scientific knowledge. Crowe argues that Whewell’s private correspondence, the text of *Plurality of Worlds*, and his other works on astronomy all suggest that he began his project with the preconceived belief that plurality and Christianity were not compatible.<sup>443</sup> Whewell’s arguments attack the claims for plurality, but do not provide strong argumentation for unity. Rather than make the case that not enough information existed to make the case for unity or plurality, however, Whewell sides definitely for unity. This certainty likely came from his religious and philosophical beliefs, but like Plato he tries to present the science as a certainty and argue that his religious and philosophical beliefs emerge from it. Unlike Plato, Whewell was further constrained to a scientific framework, because of the trend away from wide-ranging Enlightenment speculative science, to be replaced by greater caution and parsimony attended with increasing academic professionalization.

Whewell entered the cosmological debate on plurality as someone more interested in the practical application of philosophy than the scientific process.<sup>444</sup> He recognized that cosmological debates did not confine their influence to the heavens,

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<sup>442</sup> William Whewell to Sir James Stephens 25 October 1853, in Todhunter, *William Whewell*, 392.

<sup>443</sup> Crowe, *Extraterrestrial Life Debate*, 281, 89.

<sup>444</sup> Although Whewell certainly cared much more for science than did Plato, it is also worth noting that the style of Whewell’s scientific arguments are hardly distinguishable from his opponents. This reflects the blurriness of the induction/deduction distinction that he tries to draw between his approach and that of his opponents. William Whewell, *Of Induction: With Especial Reference to Mr. J. Stuart Mill’s System of Logic* (London: John W. Parker, 1849).

but instead had the potential for enormous implications for how people thought about politics, religion and morality. The *Plurality of Worlds* reinvents Plato's rhetorical use of the unity cosmology against relativism, for a post-Copernican world.

#### 4.5 THE RESPONSE

An examination of the responses to Whewell's *Plurality* helps elucidate the rhetorical elements of the work. The sheer number of responses, for one, suggests that the book had an enormous impact. Todhunter, Whewell's first major biographer, found nine books and twenty-two articles written in response to *Plurality of Worlds*. Todhunter remarked at the time, that "rarely in recent times has a book received so much attention from reviewers as [Plurality]." <sup>445</sup> Crowe expands that number to twenty books and fifty-four articles. In my research I examined the *American Periodicals Series* (APS) database and found another twenty-four articles. <sup>446</sup> The discovery of

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<sup>445</sup> Todhunter, *William Whewell*, 190.

<sup>446</sup> "Plurality of Worlds," *Circular* 3, no. 150 (1854); "Editors' Book Table: The Plurality of Worlds," *The Independent* 6, no. 290 (1854); "Editors' Table: The History of the Planets. The Elm-Tree," *Godey's Lady's Book and Magazine* 49, no. 173 (1854); W, "The Plurality of Worlds," *Christian Watchman and Reflector* 35, no. 31 (1854); "Book Notices," *The National Magazine* 5 (1854); "The Plurality of Worlds," *Christian Inquirer* 8, no. 47 (1854); "The Plurality of Worlds," *Christian Inquirer* 13, no. 39 (1859); "Literary and Scientific," *Christian Advocate and Journal* 29, no. 40 (1854); "The Plurality of Inhabited Worlds," *The Theological and Literary Journal* 7, no. 2 (1854); , *Christian Examiner and Religious Miscellany* 57, no. 3 (1854); "The Plurality of Worlds," *New Englander* 12, no. 48 (1854); "Plurality of Worlds.," "Publications," *The Monthly Religious Magazine* 12, no. 6 (1854); "The Plurality of Worlds," *Christian Watchman and Reflector* 35, no. 49; "Speculators Among the Stars: Part II.," "Speculators Among the Stars: Part I," *Littell's Living Age* 8, no. 554 (1855); "Worlds in the Sky," *Littell's Living Age* 12, no. 611 (1856); "The Master of Trinity's Plurality of Worlds," *Littell's Living Age* 12, no. 612 (1856); "Review: Plurality of Worlds," *Mercersburg Quarterly Review* (1855); "The Habitability of Worlds," *Christian Review* 80 (1855); "The Unity of the World, Versus the Plurality of Worlds," *The Albion* 14, no. 20 (1855); "The Plurality of Worlds," *The Eclectic Magazine of Foreign Literature* 37, no. 1 (1856); "Literary Notices," *Zion's Herald and Wesleyan Journal* 30, no. 17 (1859); "New Books," *The Albion* 13, no. 27 (1854); "Who shall be Leader?," *Circular* 3, no. 127 (1854).



new articles in the APS database reflects the importance of the debate, in that it spread from England into the United States at a volume much greater than previously revealed. The fervor surrounding Whewell's book reached such a pitch that one journal lamented the attention spent on the plurality question, "to [sic] many men of scientific ability and reputation, that they devote more time to controversy and speculation on subjects of no practical benefit whatever... as it can neither be settled by argument nor science, in its present state."<sup>447</sup> Most reviewers, however, treated the question as enormously important.

David Brewster wrote a fiery review condemning Whewell's book and a year later had published his own book-length response, *More Worlds than One: The Creed of the Philosopher and the Hope of the Christian* (1854). Brewster defends a robust pluralism that included the existence of life on the sun and moon. He brutally attacked Whewell's intelligence and character. Brewster refers to Whewell's arguments as, "the most ingenious, though shallow, piece of sophistry which we have ever encountered in modern dialectics."<sup>448</sup> Other reviewers latched on to Brewster's accusation of "sophistry."<sup>449</sup> Brewster also accused Whewell of being in league with the atheistic philosophy of the *Vestiges*, "[Whewell] tak[es] for granted the truth of the nebular theory, adopted by the author of the *Vestiges of Creation*, and maintained only by persons who have very erroneous ideas of creation.... Sir Isaac Newton considered

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<sup>447</sup> "Are the Stars Inhabited," *Scientific American* 9, no. 44 (1854).

<sup>448</sup> Brewster, *More Worlds than One*, 208.

<sup>449</sup> Brewster's charge of sophism was repeated favorably in *Little's Living Age*, "Speculators Among the Stars: Part II," 73. Another reviewer independently leveled the charge of sophistry. "Art. II," 46.

the nebular theory as tending to Atheism.”<sup>450</sup> Again other reviewers echoed this charge.<sup>451</sup>

The accusations of sophistry and support for the *Vestiges* must have stung Whewell. He had set out precisely to undermine sophistry and the cosmology of the *Vestiges*. Whewell found the tone of Brewster’s reply incredibly disagreeable and he wrote to a friend, “why’d [Brewster] have to be so savage?”<sup>452</sup> John Hedley Brooke suggests that Brewster’s personal grievances with Whewell motivated the attack, as the two had clashed on numerous occasions about education policy and Whewell had written Brewster a poor review.<sup>453</sup> Although this feud almost certainly added incentive for Brewster’s caustic word choice, his daughter wrote that Brewster hated the book before he knew Whewell authored it.<sup>454</sup> Furthermore, Brooke’s thesis does not explain the hostility shown by other reviewers.

A more likely explanation is that pluralism had firmly engrained itself into the scientific community. Todhunter indicates that Whewell’s private correspondences shows, “no eminent scientific name” wrote him in support of his thesis.<sup>455</sup> Of the scientists Crowe examines who responded to Whewell’s book, 83 percent favored pluralism.<sup>456</sup> The enmity of the reviews could easily have emerged from scientists attacking a heterodox position.

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<sup>450</sup> Brewster, *More Worlds than One*, 232.

<sup>451</sup> "Review 0," *The Theological and Literary Journal* 7, no. 1 (1854).

<sup>452</sup> Whewell to Murchison, 30 May 1854 in Crowe, *Extraterrestrial Life Debate*, 300.

<sup>453</sup> Brooke, "Natural Theology and the Plurality of Worlds."

<sup>454</sup> Margaret Maria Gordon, *The Home Life of Sir David Brewster* (Edinburgh: Edmonston and Douglas, 1870), 246-47.

<sup>455</sup> Todhunter, *William Whewell*, 203.

<sup>456</sup> Crowe, *Extraterrestrial Life Debate*, 352.

Even though most of these scientists shared Whewell's opposition to sophistry, *The Vestiges*, and in many cases utilitarianism, they still viewed the unity proposition as deeply problematic. I think this is because these scientists failed to perceive that advances in scientific knowledge that decentralized humanity's place in the universe would become weapons against absolute values and religion. Whewell wrote his book at the end of the period of natural theology, when some scientists assumed that science and religion would always work in tandem rather than as adversaries.<sup>457</sup> Religion served as a potential mechanism to escape any sympathy individuals had with the philosophical and theological arguments Whewell raised against the plurality thesis. Two reviews seem at first to concede Whewell's point that a plurality of worlds undermines humanity's value. *The Christian Observer* writes,

Earth was esteemed but a spark in Jehovah's realm, which might be blotted out of existence and scarcely missed in the universe of matter. So few, also, are its intelligent inhabitants, compared with the mighty whole, that they might be annihilated and their loss in the universe of intelligences would scarcely be discerned—perhaps no more than a drop of water would be missed from the ocean, or a grain of sand from the globe.<sup>458</sup>

One finds a very similar statement in *The Baptist Quarterly*, "For, as we have shown, the earth is but one of many earths. If it were annihilated, its loss would scarce be

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<sup>457</sup> Susan Faye Cannon, *Science in Culture: The Early Victorian Period* (New York: Dawson and Science History Publications, 1978), 1-3.

<sup>458</sup> "Hashshamayun; or the Heavens.; The Plurality of Worlds," *Christian Observer* 37, no. 23 (1858).

observed more than the fall of one leaf in a forest.”<sup>459</sup> Ultimately, however, Christianity allows the simultaneous existence of intelligent aliens and humanity’s privileged position. Brewster makes a similar move, by arguing that of all the planets in the universe Jesus visited earth and only earth, thereby redeeming all life on all planets.<sup>460</sup>

Brewster, Chalmers, and the writers for the *Baptist Quarterly* and the *Christian Observer* did not appear troubled by the prospect of human marginalization in a crowded universe, because the Bible clearly outlined God’s personal care of humanity. Whewell, however, did not write his book only to preach to natural philosophers. Like his forays into math education and inductive philosophy, Whewell sought a wider audience. He defended a unity cosmology in order to provide a scientific refutation of atheistic utilitarianism. Brewster felt confident that,

A mere inference or a theory in science, however, probable, must ever give way to a truth revealed; but a scientific truth must be maintained, however contradictory it may appear to the most cherished doctrines of religion. In freely discussing the subject of a plurality of worlds, there can be no collision between Reason and revelations.<sup>461</sup>

Whewell, however, still reeling from the success of the *Vestiges*, and his place on the losing side of the battle to reform education, saw that scientific theories are not

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<sup>459</sup> Winkler, "Religion and Astronomy," 72.

<sup>460</sup> Brewster, *More Worlds than One*, 145-46.

<sup>461</sup> Ibid., 133.

neutral. He understood that while natural theologians may be able to harmonize any scientific discovery with religion in their own minds, scientific theories that marginalized humanity's special nature would invite atheism and utilitarianism in the larger public.

Despite his failure to attract much support from the scientific community, Whewell did have his share of supporters.<sup>462</sup> The book achieved major popular success, going through numerous editions. Crowe finds religious journals tended to support Whewell's position about fifty percent of the time.<sup>463</sup> Ten years after Whewell's book, a journalist declared a, "state of deadlock" between plurality and unity thought.<sup>464</sup> More importantly, from Whewell's perspective he succeeded in expanding the debate from academia into public discourse. A mere three years after Whewell's book, Anthony Trollope could refer to the Whewell-Brewster debate in his book *Barchester Towers*, confident that the audience would get the reference.<sup>465</sup> In a list describing important new books, a writer for a literary magazine says *The Plurality of Worlds*, "need no comment," as to say that the book's fame would make any remark redundant.<sup>466</sup> The last known review of Whewell's book came out in 1867, a startling fourteen years after the original publication of *Plurality*.<sup>467</sup>

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<sup>462</sup> Despite the failure to attract much scientific support Whewell never surrendered the scientific case for unity in order to focus solely on religious and moral arguments. In his supplement to *Plurality* he carefully responded to the objections of all his major critics. Todhunter, *William Whewell*, 186.

<sup>463</sup> Crowe, *Extraterrestrial Life Debate*, 352.

<sup>464</sup> "Les Pluralite Des Mondes Habites," *Little's Living Age* 83 (1864): 363.

<sup>465</sup> Anthony Trollope, *Barchester Towers*, vol. 1 (Leipzig: Bernhard Tauchnitz, 1859), 226-27; Crowe, *Extraterrestrial Life Debate*, 351.

<sup>466</sup> T. W. M., "One Letter From Boston," *American Publishers' Circular and Literary Gazette* 2, no. 7 (1856): 94.

<sup>467</sup> Crowe, *Extraterrestrial Life Debate*, 359.

Whewell's book reintroduced the Platonic unity cosmology into the public debate. The Copernican revolution had smashed the crystalline heavens and opened up the physical space to populate the cosmos. Popular figures like Fontenelle and Huygens soon filled the universe with all manner of intelligent life, which became the scientific and religious orthodoxy. The success of Whewell's work, however, suggests the intuitive and ancient connection between unity and human specialness held strong in the public imagination. The power of the nonscientific aspects of unity ensured that despite widespread scientific opposition, his work would flourish. The religious and moral stakes of the question of alien life also set the stage for a future revival of the public debate over unity.

#### 4.6 A. R. WALLACE: BRIDGE TO THE 20<sup>TH</sup> CENTURY

By the turn of the century, the combination of the rise of Darwinism, belief in the nebular hypothesis, and the prevalence of an empirical methodology made the idea that “life is not only a possible implication but also a basic property of the universe,” the predominant “worldview.”<sup>468</sup> But only three years into the twentieth century, Alfred Russel Wallace wrote a book that could easily be mistaken as a sequel to *Plurality of Worlds*.<sup>469</sup> Wallace's book *Man's Place in the Universe* (1903) revived the unity

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<sup>468</sup> Dick, *The Biological Universe*, 27-35.

<sup>469</sup> The publisher of Wallace's book Chapman and Hall is notable for their publication of other major works, like H. G. Wells's *Anticipations of the Reaction of Mechanical and Scientific Progress Upon Human Life and Thought* (1902), *Mankind in the Making* (1903), and *A Modern Utopia*. (1905)

cosmology. In it, he not only argued Earth was the only planet inhabited by intelligent life, but as Whewell's *Plurality of Worlds* did, he connected this proposition with moral absolutes.

*Man's Place in the Universe* proved a smash success. It went through seven editions in five years, including cheap ones that the publishers made for a wider non-specialist audience. Despite the disinterest of the academic community, the unity cosmology continued to strike a chord among readers. Wallace's impeccable scientific credentials meant that even people opposed to his beliefs took notice of his unorthodox cosmology.

In 1870, the Entomological society elected Wallace President, he had articles regularly in *Nature*, the most prestigious science journal of the time, and in 1872 he was elected a fellow at the Linnaean society, the world's most prominent society that studied natural history. Alfred Russel Wallace's fame emerged primarily for his contributions to evolutionary theory. He independently developed a theory of evolution remarkably similar to Charles Darwin's and the two presented their ideas together at a meeting of the Linnaean Society in 1858. Wallace became a figure at the forefront of defending Darwinism and hewed so strongly to the hypothesis of survival of the fittest that he quipped, "Some of my critics declare that I am more Darwinian than Darwin himself, and in this, I admit, they are not far wrong."<sup>470</sup> Wallace's work on evolution put him in personal contact with many of the scientific luminaries of the time like Charles Darwin and Thomas Huxley.

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<sup>470</sup> James Marchant, *Alfred Russel Wallace: Letters and Reminiscences* (New York: Arno Press, 1975), 274, 75.

Wallace's connection to Darwinism makes his convergence with Whewell's ideas a surprising one. Whewell so deeply despised Darwinism that he tried to ban *On the Origin of Species* from the library at Trinity.<sup>471</sup> In fact, the differences between the two thinkers extend across a range of issues. Wallace spent his youth absorbed in books like Thomas Paine's *The Age of Reason* and attended lectures on the teachings of Robert Owen, a secularist and socialist.<sup>472</sup> Robert Chamber's *Vestiges* had an enormous impact on Wallace's early thinking about evolution and he actually became friends with Chambers later in life.<sup>473</sup> Wallace developed an interest in spiritualism that would last throughout his life.<sup>474</sup> A spiritualist, socialist, secularist, evolutionist appears the perfect opposite of the religious, politically conservative William Whewell.

The two did unite on one very important issue aside from cosmology, however. Both figures engaged heavily in political activism and came to the conclusion that science and politics were deeply intertwined. While scholars primarily remember Wallace for his scientific contributions, social activism played a large role in his life. Of his 747 articles essays, reviews, commentaries, interviews and letters 25% focused on social issues only a little less than the 27% about evolution.<sup>475</sup> Wallace pushed publically for socialism, nationalization of land, rights for women, and against

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<sup>471</sup> Michael Shermer, *In Darwin's Shadow: The Life and Science of Alfred Russel Wallace* (Oxford: Oxford University Press, 2002), 204.

<sup>472</sup> Peter Raby, *Alfred Russel Wallace: A Life* (Princeton: Princeton University Press, 2001), 14, 27, 191; David A. Stack, "The First Darwinian Left: Radical and Socialist Responses to Darwin, 1859-1914," *History of Political Thought* 21, no. 4 (2000): 690.

<sup>473</sup> Shermer, *In Darwin's Shadow*, 183; John R. Durant, "Scientific Naturalism and Social Reform in the Thought of Alfred Russel Wallace," *British Journal for the History of Science* 12, no. 1 (1979): 37, 38.

<sup>474</sup> Raby, *Alfred Russel Wallace*, 22-23; Martin Fichman, *An Elusive Victorian: The Evolution of Alfred Russel Wallace* (Chicago: University of Chicago Press, 2004), 72-73.

<sup>475</sup> Shermer, *In Darwin's Shadow*, 17. Shermer characterizes Wallace's other works as dealing with biogeography and natural history (29%), spirituality and phrenology (7%), and anthropology (12%).



mandatory vaccination and colonization.<sup>476</sup> He held residency in the Land Nationalization Society and corresponded with leading economists and political figures.<sup>477</sup> He even helped create plans to set up a utopian commune in an uninhabited part of Africa.<sup>478</sup> These political goals represent, in most cases, the polar opposite of Whewell's, but both felt the prevailing scientific and philosophical beliefs of the time threatened their political program. Whewell feared that utilitarianism would justify socialism and secularism. Wallace believed orthodox Darwinism could justify exploitation and inequality at the expense of socialism. Both wanted a scientific defense of their ethical beliefs.

#### 4.7 SOCIAL DARWINISM

The very Darwinian scientific revolution that Wallace had helped usher in, represented a serious threat to his political ideals. Darwinism appeared to give a biological justification for anti-egalitarianism. Wallace came to this conclusion, while researching in the Malay islands.<sup>479</sup> He found much to appreciate in the local Malay cultures:

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<sup>476</sup> Stack, "The First Darwinian Left," 690. Wallace believed in a socialism modeled on Edward Bellamy's book *Looking Backward* (1888), which he believed struck a balance between individual rights and economic justice. Fichman, *An Elusive Victorian*, 250-51.

<sup>477</sup> Fichman, *An Elusive Victorian*, 216, 30, 33; Makolm Jay Kottler, "Alfred Russel Wallace: The Origin of Man, and Spiritualism," *Isis* 65, no. 2 (1974): 162.

<sup>478</sup> Shermer, *In Darwin's Shadow*, 247.

<sup>479</sup> Wallace exemplified the "field scientist" approach mixing observation and high order science. Jeremy Vetter, "Wallace's Other Line: Human Biogeography and Field Practice in the Eastern Colonial Tropics," *Journal of the History of Biology* 39, no. 1 (2006).

It is a state of individual freedom and self-government, rendered possible by the equal development and just balance of the intellectual, moral, and physical parts of our nature—a state in which we shall each be so perfectly fitted for a social existence, by knowing what is right and at the same time feeling an irresistible impulse to do what we know to be right that all laws and all punishments shall be unnecessary.... Now it is very remarkable, that among people in a very low stage of civilization, we find some approach to such a perfect social state.<sup>480</sup>

This group of people, which many Europeans viewed as savage, in Wallace's mind exemplified many of his progressive political ideals.<sup>481</sup> Whereas Europeans, "have progressed vastly beyond the savage state in intellectual achievements, we have not advanced equally in morals... the mass of our populations have not at all advanced beyond the savage code of morals, and have in many cases sunk below it."<sup>482</sup> Despite the moral inferiority of Europeans, however, it was clear to Wallace that they would triumph over the local cultures either by assimilating the population or exterminating them.<sup>483</sup>

This violent colonization, while an abomination to Wallace, seems perfectly justified by Darwinian logic. If nature preserved the "fittest" at the expense of the

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<sup>480</sup> Alfred Russel Wallace, *The Malay Archipelago: The Land of the Orang-utan, and the Bird of Paradise* (New York: Harper & Brothers, 1869), 596, 97.

<sup>481</sup> Differences of opinion between Wallace and the mainstream scientific organizations of the time, stemming in large part from his observations in Malay, contributed to his embrace of radical leftist politics. Jeremy Vetter, "The Unmaking of an Anthropologist: Wallace Returns from the Field, 1862–70," *Notes and Records of the Royal Society* 64 (2010): 34–35.

<sup>482</sup> Wallace, *The Malay Archipelago*, 597.

<sup>483</sup> *Ibid.*, 595, 96.

unfit then the morally unscrupulous, but technologically superior Europeans, appear destined to destroy the morally just, but technologically inferior, Malaysians. Wallace's fear of the political implications of Darwinism went well beyond the Malaysians. Darwinism became a buzzword used to justify many of the hegemonic practices of the time, like racism, militarism, and imperialism.<sup>484</sup> Wallace looked beyond the tendency of many to throw around the term "Darwinian" carelessly and felt that the mechanics of a purely Darwinian (survival of the fittest) system actually did result in problems that required serious consideration.<sup>485</sup>

In his autobiography, Wallace attributed many of the negative aspects of America, its "landlordism" and "capitalism" that destroyed the environment and impoverished the lower classes, to a Darwinian process run amuck.<sup>486</sup> Wallace did not need to draw the connection between Darwinism and politics on his own. Many individuals, both for and against institutions like capitalism, argued that not only were *laissez faire* capitalism and many other political structures inevitable on the grounds of Darwinism, but also ethically justified.<sup>487</sup>

Francis Galton, the cousin of Charles Darwin, first sounded the alarm about the potential political implications of Darwinism grounded in the "differential birth

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<sup>484</sup> Gregory Claeys, "The "Survival of the Fittest" and the Origins of Social Darwinism," *Journal of the History of Ideas* 61, no. 2 (2000): 226.

<sup>485</sup> In this respect Wallace mirrored other Darwinian socialists, who downplayed the Malthusian and natural selection elements of Darwinism to emphasize other potential evolutionary factors. Paul, "Darwin, Social Darwinism and Eugenics," 237.

<sup>486</sup> Alfred Russel Wallace, *My Life: A Record of Events and Opinions*, vol. 2 (New York: New York, Dodd, Mead, 1905), 192-98. His negative views of structures like "landlordism" came in large part from his reading of Henry George, who he later met with on his trip to the United States. Fichman, *An Elusive Victorian*, 220-24; Shermer, *In Darwin's Shadow*, 274.

<sup>487</sup> Bernard Lightman, "Ideology, Evolution and Late-Victorian Agnostic Popularizers," in *History, Humanity and Evolution: Essays for John C. Greene*, ed. James Richard Moore (Cambridge: Cambridge University Press, 1989), 296-97.

rate.”<sup>488</sup> He felt that productive individuals (thus those with good genetics) had few children, while the poor and unproductive (those with bad genetics) had many children.<sup>489</sup> Society thus had artificially changed the natural order from the survival of the fittest to a system where the least fit would out reproduce the fit. The belief in the harm of the differential birth rates caused many individuals to oppose socialism, because by increasing equality it would further remove checks on the unfit propagating.<sup>490</sup>

Galton’s ideas had a major impact on Wallace’s thinking about the political ramifications of Darwinism. An analysis of Wallace’s writings that ranks the most influential people upon him reveals that Galton ranks eighth.<sup>491</sup> Despite his disdain for coercive eugenic programs and his support for socialism, Wallace always treated Galton’s ideas with respect.<sup>492</sup> Wallace felt some level of appreciation for the argument at the foundation of social Darwinism even though he opposed it and sought to find alternative interpretations of the science more consistent with his political beliefs.

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<sup>488</sup> Paul, "Darwin, Social Darwinism and Eugenics," 221.

<sup>489</sup> Socialism and liberalism also latched onto Darwinian ideas in order to justify their beliefs. But for the most part these efforts amounted to little more than grafting the Darwinian buzzwords onto a preexisting ideology. Stack, "The First Darwinian Left."; Paul, "Darwin, Social Darwinism and Eugenics," 233. With a few exceptions (like Wallace) most of those really applying the principles of Darwin to social practices advocated forms of eugenics and class warfare against the poor. Ibid., 234; R. J. Halliday, "Social Darwinism: A Definition," *Victorian Studies* 14, no. 4 (1971): 403-04. This is demonstrated by the entrants for a contest on the meaning of Darwinism for social practices where despite a few liberal and socialist outliers, the vast majority of entrants advocated state controlled eugenics. Paul, "Darwin, Social Darwinism and Eugenics," 238-39.

<sup>490</sup> Halliday, "Social Darwinism: A Definition."

<sup>491</sup> Smith counts the number of times Wallace’s references an individual and gives each reference further weight if the individuals name is bolded or underlined. Charles Smith, "The Most Important People in Wallace's Intellectual Life," *The Alfred Russel Wallace*, <http://people.wku.edu/charles.smith/index1.htm>.

<sup>492</sup> Diana B. Paul, "Wallace, Women, and Eugenics," in *Natural Selection and Beyond*, ed. Charles H. Smith and George Beccaloni (Oxford: Oxford University Press, 2008), 264-68.

Wallace's response to the more extreme proponents of social Darwinism helps elucidate his thinking on the matter. One of the most radical books ever written linking Darwinism to ethics and politics is the work *Might is Right* (1890). The book attacked socialism, morality, religion, and empathy and sought to instantiate behavior grounded in the survival of the fittest:

All ethics, politics and philosophies are pure assumptions, built upon assumptions. They rest on no sure basis. They are but shadowy castles-in-the-air erected by day-dreamers, or by rogues, upon nursery fables. It is time they were firmly planted upon an enduring foundation. This can never be accomplished until the racial mind has first been thoroughly cleansed and drastically disinfected of its depraved, alien, and demoralizing concepts of right and wrong... We must be, like nature, hard, cruel, relentless.<sup>493</sup>

Wallace obviously viewed such a message as anathema to his own beliefs and wrote a letter of response in the journal *The Eagle and the Serpent*. Despite his disagreement, he begins with a note of sympathy, writing, "I can understand Dr. Redbeard's position, though I cannot accept it."<sup>494</sup> Here Wallace acknowledges the intuitive connection between Darwinism and the *Might is Right* philosophy, but he disagrees with Redbeard, because he views humans as different from other animals:

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<sup>493</sup> Ragnar Redbeard and Darrell W. Conder, *Might is Right or Survival of the Fittest*, New ed. (Springfield, MO: Dil Pickle Press, 2005), 3.

<sup>494</sup> Alfred Russel Wallace, *The Eagle and the Serpent* (1900), <http://people.wku.edu/charles.smith/wallace/S580.htm>.

If men were only "herds of animals" his view might be the true one. But the mere fact that men, everywhere, and throughout all history, have had words and ideas corresponding to *truth, justice, virtue, right*, and that there have always been men who would sacrifice even their lives for these ideas, proves that mankind is *more* than an aggregation of "herds of animals."<sup>495</sup>

Wallace used the distinctions between humanity and other animals as an argument against the "survival of the fittest" justifying behavior he viewed as horrific. In crucial areas these human/animal distinctions began to affect his beliefs on the mechanics of evolution.

#### 4.8 WALLACE'S SCIENTIFIC EVOLUTION

Wallace's concerns about the political implications of Darwinism began to alter his scientific beliefs. At first Wallace maintained that all successful evolutions better equip a creature to survive: "the assertion of 'inutility' in the case of any organ or peculiarity which is not a rudiment or a correlation, is not, and can never be, the statement of a fact, but merely an expression of our ignorance of its purpose or origin."<sup>496</sup> He began to carve out an exception for humans, however, making the case that one could not explain traits like consciousness and hairlessness through competition, because while they would benefit humans in the long term, in the short

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<sup>495</sup> Ibid.

<sup>496</sup> Alfred Russel Wallace, *Darwinism: An Exposition of the Theory of Natural Selection with Some of its Applications* (London: Macmillan, 1889), 137.

term they would have no effect or even a negative effect on their survival.<sup>497</sup> Wallace argued that a force beyond utility must drive successful evolutions if a mutation that is harmful in the short run survives to facilitate a positive evolution later on. These anti-utilitarian evolutions served as proof for a teleological undercurrent to evolution, which Wallace associated with his political and spiritual beliefs.<sup>498</sup> These changes to evolutionary theory ended the necessity for a constant battle for survival, which could translate to politics of equality and cooperation. Wallace's change of mind came as a shock to Darwin who wrote, "But I groan over Man--you write like a metamorphosed (in a retrograde direction) naturalist, and you the author of the best paper that ever appeared in the *Anthropological Review*! Eheu! Eheu! Eheu! --Your miserable Friend, C. Darwin."<sup>499</sup> Darwin reacted so hostilely because he, Huxley, and others sought to create a scientific discipline totally removed from politics and religion.<sup>500</sup>

The Wallace who wrote *Man's Place in the Universe* did not believe in the bifurcation between science and the other disciplines. Many scholars claim that Wallace's change of heart on evolutionary theory reflects a move towards a more traditional natural history approach, which integrated science, religion, and politics.<sup>501</sup> As Martin Fichman eloquently articulates it, "Wallace's evolutionary cosmology, with its mix of sociopolitical reformism, theism, spiritualism, and ethical philosophy,

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<sup>497</sup> Kottler, "Alfred Russel Wallace," 154-56.

<sup>498</sup> A similar politically inspired about face occurred over the question of the role sex-selection in evolution. Wallace initially believed that only adaptations that increased survival would propagate themselves and he downplayed the idea that some traits would exist only because they appealed aesthetically to members of the opposite sex. Shermer, *In Darwin's Shadow*, 212-13.

<sup>499</sup> Marchant, *Alfred Russel Wallace*, 206.

<sup>500</sup> Martin Fichman, "Biology and Politics: Defining the Boundaries," in *Victorian Science in Context*, ed. Bernard V. Lightman (Chicago: University of Chicago Press, 1997), 103.

<sup>501</sup> Joel S. Schwartz, "Darwin, Wallace, and the 'Descent of Man'," *Journal of the History of Biology* 17, no. 2 (1984): 283-86; Durant, "Scientific Naturalism and Social Reform in the Thought of Alfred Russel Wallace," 40-53; Fichman, *An Elusive Victorian*, 268-77.

abandoned any pretext of ideological neutrality.”<sup>502</sup> Of course, Darwin and Huxley had their own ideological agenda, but they approached it in a much more subtle manner.<sup>503</sup>

Given the number of scholars who suggest that Wallace integrated science, politics, and spiritualism, it should come as no surprise to find a political and spiritual agenda in his cosmology. However, while many scholars recognize the political and spiritual undertones of *Man's Place in the Universe*, they do not offer much of an explanation of how the book connects with Wallace's broader agenda.<sup>504</sup> Remember that religious opinion split on the question of plurality and prominent Marxist figures like Friedrich Engels had no problem reconciling plurality with a call for social justice. This returns us to William Whewell, with whom Wallace begins his book.<sup>505</sup>

Wallace proclaims his intellectual debt to Whewell's *Plurality of Worlds*. In the introduction this occurs mostly in terms of specific scientific arguments that Whewell made. As one reads the book, however, it is clear Wallace also views the implications of the plurality debate in similar terms. When discussing the Copernican revolution Wallace says that it, “seemed to upset the whole accepted order of nature, and to degrade man by removing his dwelling-place, the earth, from the commanding central position it had always before occupied.”<sup>506</sup> Wallace must have been acutely aware that the Darwinian revolution he helped engineer had a similar “degrading” effect on humanity. His cosmology represents an attempt to blunt the materialism that

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<sup>502</sup> Fichman, *An Elusive Victorian*, 6.

<sup>503</sup> Fichman, "Biology and Politics: Defining the Boundaries," 103-05.

<sup>504</sup> Shermer, *In Darwin's Shadow*, 22, 231; Raby, *Alfred Russel Wallace*, 272 ; Fichman, *An Elusive Victorian*, 288, 301-13.

<sup>505</sup> Alfred Russel Wallace, *Man's Place in the Universe: A Study of the Results of Scientific Research in Relation to the Unity of Plurality of Worlds* (New York: McClure Phillips & Co., 1903), 12-24.

<sup>506</sup> *Ibid.*, 8.



many saw as an inevitable product of the new scientific developments.<sup>507</sup> Wallace ends his book by making this claim explicit:

All this life upon our earth has led up to and culminated in that of man. It has been, I believe a common and not unpopular idea that during the whole process of the rise and growth and extinction of past forms, the earth has been preparing for the ultimate—Man. Much of the wealth and luxuriance of living things, the infinite variety of form and structure, the exquisite grace and beauty in bird and insect, in foliage and flower, may have been the mere by-products of the grand mechanism we call nature—the one and only method of developing humanity. And is it not in perfect harmony with this grandeur of design (if it be design), this vastness of scale, this marvelous process of development through all the ages, that the material universe needed to produce this cradle of organic life, and of a being destined to a higher and a permanent existence, should be on a corresponding scale of vastness, of complexity, of beauty? Even if there were no such evidence as I have here adduced for the unique position and exceptional characteristics which distinguish the earth, the old idea that all the planets were inhabited, and that all the stars existed for the sake of other planets, which planets existed to develop life, would, in light of our present knowledge, seem utterly improbable and incredible. It would introduce monotony into a universe whose grand character and teaching is

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<sup>507</sup> It should come as no surprise that Wallace initially titled the book *Universe for Man*, a name that foreshadows the heavily anthropocentric nature of the work. Steven J. Dick, "The Universe and Alfred Russel Wallace," in *Natural Selection and Beyond*, ed. Charles H. Smith and George Beccaloni (Oxford: Oxford University Press, 2008), 325.

endless diversity. It would imply that to produce the living soul in the marvelous and glorious body of man—man with his faculties, his aspirations, his powers for good and evil—that this was an easy matter which could be brought about anywhere, in any world. *It would imply that man is an animal and nothing more*, is of no importance in the universe, needed no great preparations for his advent, only, perhaps, a second-rate demon, and a third of fourth-rate earth.<sup>508</sup> (italics and bolding mine)

In the passage, Wallace addresses the concerns of the “degrading” implications of the heliocentric model. Humanity may not inhabit the physical center of the universe, but the universe exists, “to produce this cradle of organic life.” Humanity holds the spot in the spiritual, metaphysical, or metaphorical center, depending on which specific frame one chooses to deploy.

Beyond heliocentrism the passage tackles Darwinism, by portraying the process of evolution as centered upon humanity. As the *telos* of the universe, humanity becomes elevated from another mere animal produced by the Darwinian process to something special. Wallace addresses this point in a reverse fashion. Absent unity, humanity would be “an animal and nothing more,” which implies the opposite that absent plurality humanity exists as not just another species of animal. Wallace believed Darwinism on a universal scale represents the true threat to spirituality and social progress, by justifying social Darwinism. Darwinism on a universal scale introduces “monotony” into a “diverse” system and makes the process of Darwinism,

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<sup>508</sup> Wallace, *Man's Place in the Universe*, 316-17.

rather than its result, humanity, the central story of existence. Darwinism on a planetary scale avoids these problems because it merely serves as the mechanism for bringing about humanity, not an end in and of itself.<sup>509</sup>

Survival of the fittest on many planets also opens up the possibility for evolution that results in animals radically different from humanity, just as a non-teleological evolution allows for human futures that do not result in the type of socialist, ecologically minded, egalitarian society that Wallace desired. In fact, the future in a non-teleological world would only bring destruction as Wallace writes, “If man is a product of blind forces and unconscious laws acting upon non-living matter, then, as he has been produced by physical law, so he will die out by the continued operation of the same laws, against which there is no appeal.”<sup>510</sup> For Wallace humanity’s very future depends on its specialness and perhaps even more importantly, humanity should care about that future because of its specialness.

In *The World of Life* (1910), which Wallace “considered supplementary” to *Man’s Place in the Universe*, he expands on this argument.<sup>511</sup> He shows that the combination of the plurality cosmology and Darwinism provides the justification for some scientists to devalue humanity. Wallace quotes the well known German biologist Ernst Haeckel to emphasize his point, “Our own human nature sinks to the level of a placental mammal, which has no more value for the universe at large than the ant, the fly of a summer’s day, the microscopic infusorium, or the smallest

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<sup>509</sup> It is important to stress that not all socialists held this view. In fact, many felt that Darwinism justified the Marxist belief in progress. Stack, “The First Darwinian Left.”

<sup>510</sup> Wallace, “Man’s Place in the Universe,” 397.

<sup>511</sup> Wallace, *The World of Life*, VIII.

bacillus.”<sup>512</sup> While Wallace claims he finds Haeckel’s argument, “beyond my comprehension,” it is clear that he means that he cannot imagine this possibility in part because of his unity cosmology.<sup>513</sup> In a Darwinian plurality it also may be that humanity has no more value than bacteria. However, in the unity cosmology, humanity exists as the central focus of the universe.

Wallace gives another reason that unity provides the necessary foundation for spiritualism and ethics: Darwinism without teleology not only lacks purpose, but also represents a system of profound purposeless suffering. He explains,

The idea, therefore, that the whole system of nature from the remotest eons of the past—from the very first appearance of life upon earth—has been founded upon destruction of life, on the daily and hourly slaughter of myriads of innocent and often beautiful living things, in order to support the lives of other creatures, which others are specifically adapted to destroy them, and are endowed with all kinds of weapons in order that they may the more certainly capture and devour their victims.<sup>514</sup>

Wallace presents an interpretation of evolution, where the mechanism of advancement appears unnecessarily cruel. Wallace follows this quote with similar ones from Thomas Huxley and J. Arthur Thomson in order to make the case that many prominent

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<sup>512</sup> Ibid., 403.

<sup>513</sup> Ibid.

<sup>514</sup> Ibid., 398.

scientists view evolution as a cruel product of nature, rather than a system consistent with divine benevolence.<sup>515</sup>

The view of human life as a random product of cruelty and suffering, rather than divine guidance proves deeply problematic for Wallace, because he cannot reconcile it with a benevolent religion or a socialist future.<sup>516</sup> He writes, “all this is so utterly abhorrent to us that we cannot reconcile it with an author of the universe who is at once all-wise, all-powerful and all-good.”<sup>517</sup> The belief that Darwinism disproves a loving God has high-profile adherents, like Huxley, who Wallace quotes, “were our ears sharp enough, we should hear sighs and groans of pain like those heard by Dante at the gate of Hell, the world cannot be governed by what we call benevolence.”<sup>518</sup> As previously discussed Wallace believes that the suffering intrinsic to Darwinism can also call into question progressive politics.<sup>519</sup> If all life exists on a foundation of pain and suffering then one could easily dismiss Wallace’s socialist hopes as counter to biological reality, as many did.<sup>520</sup>

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<sup>515</sup> Ibid., 399-400.

<sup>516</sup> This utilitarian view of the pain inflicted by nature was bolstered by Darwinism. Many individuals at the time felt that Darwin’s theory provided scientific proof for orthodox utilitarian beliefs. Darwinism did alter utilitarian thinking in that it caused many proponents to view individuals as a product of their genetic makeup (and thus the choices of their ancestors), rather than fully autonomous individuals. Halliday, "Social Darwinism: A Definition," 395-96. This gives further credence to the idea that Wallace wanted a view of evolution where a break occurred between humanity and its animal past, in order to separate humanity from the baser instincts of its ancestors.

<sup>517</sup> Wallace, *The World of Life*, 398.

<sup>518</sup> Ibid., 400.

<sup>519</sup> The reason the prospect of a cruel natural order represented such a deep concern for Wallace and did not bother many other liberal Darwinist probably stems from his belief in natural philosophy. Wallace, like Whewell, Plato, and Aquinas, believed the natural order shaped the moral order. Other liberal Darwinists could maintain socialist beliefs in conjunction with their belief in evolution with no difficulty, because they viewed human social order as disconnected from the natural order (although some viewed the evolutionary aspect of Darwinism as a natural indication of progression that would culminate in socialism). Stack, "The First Darwinian Left."

<sup>520</sup> Lightman, "History, Humanity and Evolution," 296-97; James Allen Rogers, "Darwinism and Social Darwinism," *Journal of the History of Ideas* 33, no. 2 (1972).

The unity cosmology helps ameliorate the Darwinian threat to Wallace's beliefs on religion and politics. In a unity cosmology, the process of evolution to create humanity only needs to occur once. Wallace writes that as terrible as the evolutionary process may be, having it take place once would be justified because humanity has the power to reduce suffering,

that the universe had no designer or creator, but has always existed; and that the life-pageant, with all its pain and horror, has been repeated cycle after cycle from eternity in the past, and will be repeated in similar cycles for ever. We have here presented to us one of the strangest phenomena of the human mind—that numbers of intelligent men are more attracted by a belief which makes the amount of pain which they think does exist on the earth last for all eternity in successive worlds without any permanent and good result whatever, than by another belief, which admits the same amount of pain into one earth only, and for a limited period, while whatever pain there is only exists for the grand purpose of developing a race of spiritual beings, who may thereafter live without physical pain—also for all eternity!<sup>521</sup>

Evolution works to create humanity, who through the political process will bring about an end to pain on earth and through spiritual piety end it for all eternity by achieving access to some form of afterlife. Although evolution had its problems Wallace writes that it must, “be *the best*, and almost certainly the *only* method, that could have

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<sup>521</sup> Wallace, *The World of Life*, 400, 01.

subsisted through the immeasurable ages and could have then produced a being capable, in some degree, of comprehending and appreciating it. For *that* is surely the glory and distinction of man.”<sup>522</sup> Evolution, thus, represents the least necessary evil to create humanity, which could ultimately end the world’s suffering through spiritualism and progressive politics.

Plurality called into question the idea of evolution as the least necessary evil, because it required repeating the evolutionary process on different planets. Wallace, like Whewell, viewed the existence of more races of intelligent beings as superfluous. Humanity could achieve the purpose of “comprehending and appreciating” creation as well on its own as could humanity and a variety of intelligent alien races. The idea that the evolutionary process happens on a plurality of worlds further magnifies the concerns raised by Huxley, because the horrors of “survival of the fittest” occur endlessly across the universe, rather than once on earth.

#### 4.9 PUBLIC BATTLE

Wallace saw the unity cosmology as central to his spiritual and political mission. He wrote in his autobiography that the cosmological turn as represented by *Man’s Place in the Universe* represents, “the ‘third chapter of my book,’ that is to say of my literary work.”<sup>523</sup> He felt many scientists had overstepped their bounds in pushing a materialistic and ethically blind worldview. The public, meanwhile, accepted these

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<sup>522</sup> Ibid., 403.

<sup>523</sup> Wallace, *My Life*, 416.

pronouncements according to Wallace, because, “when a man becomes widely known as a great authority in any department of science, [many people] accept him as a safe guide in any other departments on which he expresses his opinions.”<sup>524</sup> Despite his criticism of the mixture of science with ethical and political pronouncements, Wallace took up a similar strategy of using a scientific foundation to provide justification for his beliefs. Given Wallace’s change of view on the nature of evolution to harmonize his scientific beliefs with his political and religious beliefs, this should come as little surprise.

The desire to continue speaking to the public ensured that Wallace would persist beyond *Man’s Place in the Universe* and *The World of Life*. He vigorously defended his scientific position in the press, writing two articles to respond to his critics.<sup>525</sup> In 1906, the famous scientist Percival Lowell wrote a follow up book to his argument that telescopes revealed that Mars had a series of intricate canals.<sup>526</sup> Lowell argued that only an advanced civilization of intelligent creatures could have created these canals. Wallace responded a year later with a book-length review that refuted the science behind Lowell’s claims, cementing himself as one of Lowell’s most prominent critics.<sup>527</sup> For Wallace, the existence of canals on Mars implied the existence of intelligent life, which threatened spiritualism and socialism and it is likely

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<sup>524</sup> Wallace, *The World of Life*, 7.

<sup>525</sup> Alfred Russel Wallace, “Does Man Exist in Other Worlds “A Reply to my Critics”,” *The Daily Mail*, Nov. 12, 1903; Alfred Russel Wallace, “Man’s Place in the Universe: A Reply to Criticisms,” *The Independent* Aug. 27, 1903.

<sup>526</sup> Percival Lowell, *Mars and its Canals* (London: Macmillan, 1906). Lowell’s position attracted disdain from scientists independent of their belief in unity, because of his amateur approach to the scientific question. Norriss S. Hetherington, “Percival Lowell: Professional Scientist or Interloper?,” *Journal of the History of Ideas* 42, no. 1 (1981).

<sup>527</sup> Alfred Russel Wallace, *Is Mars Habitable? A Critical Examination of Professor Percival Lowell’s Book “Mars and its Canals,” with an Alternative Explanation* (London: Macmillan & Co., 1907).



he felt that winning the scientific debate would go along way to convince the public of these other views.

By integrating science, religion and ethics to achieve a correct scientific understanding of the world, Wallace believed he created a foundation for social or spiritual change. Wallace understood the power of scientists to influence the terms of these other debates, because of their credibility with the public.<sup>528</sup> Wallace's desire to lend scientific authority to his religious and political arguments help explain why he rejected the label "Wallaceism," rather than "Darwinism," despite the many differences the he and Darwin had over evolution. He wanted to maintain the persuasive capital of Darwinism in order to make the case for his political and religious views, rather than have to publically legitimize a new scientific term, before he could use it rhetorically.<sup>529</sup>

Wallace's political, philosophical and spiritual views impacted his approach to science. He began as an empirically minded scientist, who bragged about being more Darwinian than Darwin. The connections that he and others drew between Darwinism and social order changed the way Wallace engaged in science. He began by trying to make exceptions to the theory of evolution for human intelligence in order to place humanity outside the survival of the fittest framework, which justified exploitation. The unity cosmology served as another scientific justification for humanity's

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<sup>528</sup> George Cornewall Lewis wrote in 1849 that "No species of imposture is so captivating, so well-suited to the present time, and consequently so likely to meet with temporary success, as that which assumes the garb, and mimics the phraseology, of science." George Cornewall Lewis, *An Essay on the Influence of Authority in Matters of Opinion* (London: J. Parker, 1849), 55. The Darwinian revolution combined with rhetorical maneuvers of scientific advocates only cemented this credibility. Thomas F. Gieryn, *Cultural Boundaries of Science: Credibility on the Line* (Chicago: Chicago University Press, 1999), 62-64.

<sup>529</sup> Fichman, *An Elusive Victorian*, 310-11.

privileged position. Wallace believed unity could provide a foundation for ethics grounded in transcendental values.

#### 4.10 CONCLUSION

Wallace, like Whewell, failed to make many converts to his cosmology within the scientific community.<sup>530</sup> Despite the scientific opposition to unity, however, Wallace's cosmological writings achieved major commercial success.<sup>531</sup> Something about unity resonated with the public, despite its rejection among the intelligentsia. Wallace's book delighted Calvinist Christians who continued to reject the peace the Catholic Church had made with plurality.<sup>532</sup> Many presumed the new science of the modern era had definitively enshrined plurality, but nothing could be further from the truth.

Plato's cosmological argument for the Good reached its zenith in medieval Europe, but the advent of modernity only represented a setback. While scientists relegated orderly orbits, geocentrism, and ethereal celestial objects to the dustbin of history, unity remained an open question. Whewell and Wallace recognized unity's value as a human-privileging science in a time when biology, geology, and physics all increasingly marginalized the species. While fellow scientists may have shunned their work, Whewell and Wallace kept the plurality debate alive in the public imagination.

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<sup>530</sup>Dick, *The Biological Universe*, 50-51.

<sup>531</sup>*Man's Place in the Universe* went through seven editions in five years. Fichman, *An Elusive Victorian*, 293.

<sup>532</sup>Alfred William Benn, *History of English Rationalism in the Nineteenth Century*, vol. 1 (London: Longmans and Green, 1906), 84-86.

The defense of unity by figures with political and religious views as divergent as Whewell and Wallace demonstrates the power of the cosmology. If they had lived during the same time period, Whewell and Wallace would likely have fiercely opposed one another politically. Whewell favored conservatism, whereas, Wallace supported radical social change. They both believed that their ideologies depended on an inherent dignity of humanity and the existence of transcendent values. Both men viewed unity as a scientific proof for these two foundational beliefs.

The way the unity plurality debate intertwined with broader philosophical and religious issues meant that despite the paucity of evidence for either side, strong opinions abounded. A writer from the *National Magazine* cautioned that since the Bible did not explicitly take a position on plurality it was best to keep an open mind, but such an even-handed approach proved exceedingly rare.<sup>533</sup> Most of those who mentioned plurality had strong opinions on the matter. One astute writer for *Littell's Living Age* suggested, "[the question of plurality] will never be settled, it may form a point of comparison for the minds, the methods, and the states of opinion in different ages."<sup>534</sup>

The plurality vs. unity question represents a cosmological Rorschach test that can reveal the underlying philosophical beliefs of its most ardent debaters. Equally important, the scientific framework underlying cosmological claims made them rhetorically powerful in a time when scientific thinking gained increasing credibility. Whewell and Wallace could encode philosophical, political, and religious ideas into the very structure of the universe.

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<sup>533</sup> "The Silence of Scripture," *National Magazine* 13 (1858).

<sup>534</sup> "Plurality of Worlds," *Littell's Living Age* 11, no. 596 (1855).

## 5.0 TIPLER AND BARROW

What should one make of this quartet of WAP, SAP, PAP, and FAP? In my not so humble opinion I think the last principle is best called CRAP, the Completely Ridiculous Anthropic Principle.<sup>535</sup>

Martin Gardner

Important changes between the nineteenth and twentieth centuries in the discursive framework of the scientific enterprise should have rendered the unity cosmological argument obsolete. The nineteenth century saw the solidification of the new discipline of “science,” emerging out of natural philosophy.<sup>536</sup> “Science,” stripped of its past associations with religion, emerged as one of the definitive rhetorical frames of the twentieth century.<sup>537</sup> In modern times the scientific community largely promotes an “objective,” materialist methodology that seeks to leave philosophical concerns like teleology and morality by the wayside.<sup>538</sup> This culture of “objectivity” manifests itself

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<sup>535</sup> Martin Gardner, "WAP, SAP, PAP, & FAP," *The New York Review of Books* (1986).

<sup>536</sup> David Cahan, "Looking at Nineteenth-Century Science: An Introduction," in *From Natural Philosophy to the Sciences: Writing the History of Nineteenth*, ed. David Cahan (Chicago: University of Chicago, 2003), 4-5.

<sup>537</sup> Wander, "The Rhetoric of Science," 226; Kenneth Burke, *A Grammar of Motives* (Berkeley,: University of California Press, 1969), 351-54.

<sup>538</sup> Of course the situation is more complicated than this some scientists importing the structure of religion into their scientific beliefs. Yet it is easy to go too far in the direction of conflating science and religion. For example, Lessl uses Carl Sagan as a case of one who merges science with morality and

most clearly in disregard for religious and spiritual ideas as tools for explaining how the world works.<sup>539</sup> Even absent outright disciplinary rejection of the spiritual and philosophical, the scientific social structure delimits thought outside the confines of accepted scientific methods.<sup>540</sup> These developments appear to set a difficult environment for a rhetor to reintroduce the unity cosmology argument.

Tipler and Barrow's 1986 book *The Anthropic Cosmological Principle* managed to revive both the unity cosmology and its connection to absolute values, without surrendering scientific legitimacy.<sup>541</sup> Both respected scientists, Tipler and Barrow present some of the contemporary thinking on cosmology and quantum mechanics, as well as a deep review of the history of teleology. The defense of religion or philosophy with science can undermine the scientific ethos by calling into question the scientist's objectivity, a point that will be made more fully later in the chapter.<sup>542</sup> Tipler and Barrow successfully walk a fine line, however, only hinting at the philosophical implications of their work, all the while adopting a technical style reminiscent of a scientific journal.<sup>543</sup> The successful balancing act made their work acceptable within scientific community, despite the book's deviation from the normal

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philosophy, but Sagan was highly criticized by many professional scientists for his methods of popularizing science. Lessl, "Science and the Sacred Cosmos."; Lessl, "The Culture of Science and the Rhetoric of Scientism."

<sup>539</sup> Lessl, "The Culture of Science and the Rhetoric of Scientism," 126, 44; David J. Tietge, *Rational Rhetoric: The Role of Science in Popular Discourse* (West Lafayette, IN: Parlor Press, 2008), 123-31. 123-131

<sup>540</sup> William J. Kinsella, "Rhetoric, Action, and Agency in Institutionalized Science," *Technical Communication Quarterly* 14, no. 3 (2005).

<sup>541</sup> This chapter argues that Tipler and Barrow's work has a major impact, but of course they lack the stature of the previous case studies, like Plato and Whewell.

<sup>542</sup> Richard Weaver, "Dialectic and Rhetoric at Dayton, Tennessee " in *Landmark Essays on the Rhetoric of Science: Case Studies* ed. Randy Allen Harris (Mahway, NJ: Lawrence Erlbaum, 1997), 107-26

<sup>543</sup> Lawrence J. Prelli, "The Rhetorical Construction of Scientific Ethos " in *Landmark Essays on the Rhetoric of Science: Case Studies* ed. Randy Allen Harris (Mahway, NJ: Lawrence Erlbaum, 1997), 107-26

practice of excluding the philosophical implications from discussions.<sup>544</sup> This scientifically legitimated philosophy helped ensure Tipler and Barrow's ideas took hold well beyond the hard sciences.<sup>545</sup> Philosophers and theologians made heavy use of the book to defend teleology with a "new" scientific justification, as will be discussed below. Beyond academia, *The Anthropic Cosmological Principle* became a best seller and even found its way into the political speeches of the President of the Czech Republic.<sup>546</sup>

Despite the new science found in the book, Tipler and Barrow deploy a version of Plato's ancient unity cosmology argument. Brian Aldiss, writing in *Nature*, referred to the Tipler and Barrow's *Anthropic Cosmological Principle* as "a powerful sequel to Whewell's argument."<sup>547</sup> Aldiss appears to have made the connection between the two works based on solely on their defense of unity. This chapter reads *The Anthropic Cosmological Principle* rhetorically, and claims that it serves as a sequel to the work of Whewell, Aquinas, Wallace, and Plato not only because of its denial of plurality, but also in how it presents a modern day instantiation of the philosophical/cosmological argument from the *Timaeus*.<sup>548</sup> Tipler and Barrow face new constraints based on the preferences of their audience, which shape the way they frame the issue, but the fundamental connection of human aloneness with absolute

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<sup>544</sup> Advertisements for the book appeared in philosophy journals, science journals, and religion journals, which suggests Oxford University Press understood the potential cross over nature of the work.

<sup>545</sup> Even in the Creationism vs. Evolution debate a prime example of religion vs. science, modern defenders of creationism put forth the scientific justification of Intelligent Design.

<sup>546</sup> Vaclav Havel, "The New Measure of Man," *The New York Times*, July 8, 1994; Julian Barbour, "Why We Should Fear Vast Change," *The Times Higher Education Supplement*, April 18 2003.

<sup>547</sup> Brian W. Aldiss, "Desperately Seeking Aliens," *Nature* 409 (2001): 1081.

<sup>548</sup> Marie George argues that the Anthropic Principle generally represents a reformatted version of Aquinas' arguments. Marie I. George, "On the Tenth Anniversary of Barrow and Tipler's Anthropic Cosmological Principle," *American Catholic Philosophical Quarterly* 72, no. 1 (1998).

values has changed little. Tipler and Barrow present metaphysics in the guise of physics, which creates a broadbased rhetorical appeal grounded in the respect afforded to science.

## 5.1 THE STATE OF THE DEBATE

Although Wallace's unity position found few active scientific defenders, the 1920s-30s saw many dismiss the possibility of alien life beyond the solar system as unlikely, due to stellar collisions. Astronomer Royal Sir Harold Spencer Jones's *Life on Other Worlds* (1940), which became the standard text on the subject for a quarter of century, rejected this view.<sup>549</sup> Jones put forth an image of a vast universe, in which our solar system did not have a special location. He wrote, "with the universe constructed on so vast a scale, it would seem inherently improbable that our small Earth can be the only home of life."<sup>550</sup> The book that would replace Spencer's as the dominant text on the plurality question, Carl Sagan and Iosef Shklovskii's *Intelligent Life in the Universe* (1966), proved even more supportive of the probability of alien life.<sup>551</sup>

By 1980, voices in the scientific community speaking on the plurality question typically favored the belief in alien life, although not nearly as strongly as in the late

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<sup>549</sup> Dick, *The Biological Universe*, 53-54.

<sup>550</sup> Jones Spencer, H., *Life On Other Worlds* (New York: Macmillan, 1940), vii.

<sup>551</sup> It's worth noting the rise of the presence of aliens in popular culture during the twentieth century. Although Voltaire, Kepler, and many others wrote stories about aliens Dick argues the "the true extraterrestrial alien, replete with its own physical and mental characteristics, is a relatively recent invention." Dick, *The Biological Universe*, 223. Whether or not Dick is correct in this assessment its clear that aliens took an especially prominent place in popular culture beginning in the late 19<sup>th</sup> century with the works of H. G. Wells and Kurd Lasswitz and remaining strong through the present day. Ibid., 222-66.

1800s. Carl Sagan rocketed to fame by speaking and writing about the likelihood of extraterrestrial life. NASA made the search for alien life one of its top priorities during the exploration of Mars, which helped gain the mission enthusiastic public support.<sup>552</sup> In fact, scientists attributed NASA's ability to acquire public funding in the economic downturn of the 1970s to Sagan's promise of discovering intelligent aliens.<sup>553</sup> Frank Drake created a formula (the Drake equation) for determining the probable number of intelligent alien civilizations, which had the technology to send signals of their existence. Most readings of the Drake equation by scientists of the time placed the number of such civilizations fairly high. In no small part due to Drake's equation, the plurality thesis maintained a comfortable place with the astronomy community.<sup>554</sup> In 1983 the United States government provided 1.5 million dollars to the Search for Extraterrestrial Intelligence (SETI) to scan for radio messages from alien civilization.<sup>555</sup> SETI represented one of the few areas of agreement between the United States and the Soviet Union: both invested resources into exploring the question of alien life and scientists from both countries met to discuss the question.<sup>556</sup>

Despite the broad support for plurality some scientists still held strong in their support for unity beliefs. Many biologists, for one, never came on board to the plurality consensus, with figures like Theodosius Dobzhansky, George Gaylord

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<sup>552</sup> Ibid., 141-46.

<sup>553</sup> George Basalla, *Civilized Life in the Universe: Scientists on Extraterrestrials* (Oxford: Oxford University Press, 2006), 112-13.

<sup>554</sup> Dick, *The Biological Universe*, 437-38.

<sup>555</sup> Basalla, *Civilized Life in the Universe*, 165.

<sup>556</sup> Mark A. Sheridan, "SETI's Scope: How the Search for Extraterrestrial Intelligence became Disconnected from New Ideas about Extraterrestrials" (Dissertation, Drew University, 2009), 67-93. Although the two groups of scientists did disagree on some of the issues relating to the science of SETI, as I will discuss later in the chapter.



Simpson, J. Francois, Francisco Ayala, and Ernst Mayr defending unity.<sup>557</sup> The evolutionary argument against unity rested on the statistical improbability of intelligence's evolution on earth.<sup>558</sup> Many biologists felt that earth had won the equivalent of a cosmic lottery and the chances for intelligent life to emerge on any given planet were so small that for it to occur twice was improbable even in a vast universe.<sup>559</sup>

The 1970s also contained hints of the emergence of a vocal unity contingent within the field of astronomy. In 1975, Michael Hart made the case against alien life in a major astronomy journal, by invoking Fermi's paradox.<sup>560</sup> Fermi's paradox gains its name from physicist Enrico Fermi (although its origin is much older).<sup>561</sup> In 1950, while working at the Los Alamos National Laboratory, Fermi asked the simple question, if intelligent aliens exist, "where are they?"<sup>562</sup> Only a few years after Hart's article, in 1979, scientists opposed to belief in alien intelligence organized a conference focused on the Fermi's paradox.<sup>563</sup> Although voices sympathetic to the plurality spoke, like Jill Tatar of the SETI institute, the conference participants came down firmly against the probability of intelligent aliens.

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<sup>557</sup> Frank J. Tipler, "Extraterrestrial Intelligent Beings do not Exist," *Quarterly Journal of the Royal Astronomical Society* 21 (1980): 267.

<sup>558</sup> The use of probable as opposed to certain claims by many of the unity and plurality proponents reflects a general trend in the sciences. Lorenz Krüger et al., eds., *The Probabilistic Revolution* (Cambridge, MA: MIT Press, 1987).

<sup>559</sup> Tipler, "Extraterrestrial Intelligent Beings do not Exist," 267.

<sup>560</sup> Michael H. Hart, "An Explanation for the Absence of Extraterrestrial Life on Earth," *Quarterly Journal of the Royal Astronomical Society* 16 (1975).

<sup>561</sup> David Grinspoon points to Fontenelle's *Conversations on the Plurality of Worlds* as containing a precursor to Fermi's paradox. Grinspoon, *Lonely Planets*, 23.

<sup>562</sup> Eric Jones, "Where is Everybody," *Physics Today* 38, no. 8 (1985): 11-13.

<sup>563</sup> Ben Zuckerman and Michael H. Hart, eds., *Extraterrestrials: Where Are They?* (Cambridge: Cambridge University Press, 1995).

In 1980, Frank Tipler, then a professor of Mathematics at U.C. Berkeley, entered the debate with his article “Extraterrestrial Intelligence Does Not Exist.”<sup>564</sup> Tipler was born February 1, 1947 in Andalusia, Alabama. He claims that as a child he was inspired by “Werner von Braun, and decided then that I wanted to be an astrophysicist.”<sup>565</sup> His parents raised him as a Christian fundamentalist, but he became an atheist at sixteen, because he felt that science clearly contradicted the claim that the Earth was only 6,000 years old.<sup>566</sup> After finishing his Ph.D. at M.I.T., he became a post-doc for the famous Princeton physicist John A. Wheeler, who Tipler notes on his website was the Ph.D. advisor of the even more famous R. P. Feynman.<sup>567</sup> Before his interest in alien life, Tipler published several articles on general relativity in prestigious journals.<sup>568</sup> Even George Ellis, Professor of Applied Mathematics at the University of Cape Town, who became one of Tipler’s harshest critics, claimed that Tipler did “nice work” in these early articles.<sup>569</sup>

In his 1980, Tipler provided a defense of Fermi’s paradox. His article answered the claim that no aliens have visited Earth because space colonization would prove prohibitively expensive. He theorized that Von Neuman probes (intelligent machines that have the ability to self replicate) could quickly and relatively cheaply

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<sup>564</sup> Tipler, "Extraterrestrial Intelligent Beings do not Exist."

<sup>565</sup> Frank J. Tipler, “Biography,” *Frank J. Tipler Home Page*, <http://129.81.170.14/~tipler/biography.htm>.

<sup>566</sup> Megan Tressider, "The Megan Tressider Interview: Meaning of Life is, Er, God and Omega, Physicist Frank J Tipler, an atheist, says he has found God," *The Guardian* 1995.

<sup>567</sup> Tipler, “Biography.”

<sup>568</sup> Frank J. Tipler, "Rotating Cylinders and the Possibility of Global Causality Violation," *Physical Review D* 9, no. 8 (1974); Frank J. Tipler, "Causality Violation in Asymptotically Flat Spacetimes," *Physical Review Letters* 37 (1976); Frank J. Tipler, "Energy Conditions and Spacetime Singularities," *Physical Review D* 17 (1978); Frank J. Tipler, "General Relativity and Conjugate Ordinary Differential Equations," *Journal of Differential Equations* 30 (1978); Frank J. Tipler, "General Relativity, Thermodynamics, and the Poincare Cycle," *Nature* 280 (1979).

<sup>569</sup> George Ellis, "Piety in the Sky," *Nature* 371, no. 8 (1994): 115; Tressider, "Meaning of Life is, Er, God and Omega."

explore the entire universe. Tipler makes the case that an intelligent alien race would certainly deploy Von Neuman probes to explore the universe and colonize other planets. While one can object that Tipler would have little knowledge of what an *alien* race would or would not do, he makes a compelling case for why probes represent a more efficient--and thus more likely--method of exploration than the radio waves that many in the SETI community believed aliens would send.<sup>570</sup> Tipler claimed the absence of any signs of probes as proof of the lack of intelligent extraterrestrial life. More importantly for this dissertation, Tipler examines the philosophical implications of the unity v. plurality debate and made it a focus of his article.<sup>571</sup> Tipler entered the fray read to combat both the majority scientific support for plurality and its philosophical implications.

## 5.2 TIPLER'S RHETORICAL ANALYSIS

The editor divided Tipler's initial manuscript article into three parts, because of a miscommunication. The journal released the three parts over the course of the same year. The first section released focused primarily on Tipler's updates to the Fermi paradox. The other two parts provide a history of extraterrestrial life debate, in which Tipler explores the extra-scientific implications of unity by means of examining the

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<sup>570</sup> Tipler's predictions of what aliens would do bear some resemblance to Plato and Aquinas' discussion of how God designed the universe. Both represent the attribution of values, desires, and motivations to a largely unknowable other.

<sup>571</sup> Tipler's original article was divided into three parts, because of a miscommunication between him and the editor. The three parts were released in the same journal within the same year. I treat these three articles as a unit for purposes of analysis.

motivations of scholars engaged in the debate. Unsurprisingly, given his position as an active defender of unity, Tipler only recognizes the plurality defenders as having an ulterior agenda connected to philosophy and religion. He concludes his section on the history of the plurality debate by saying, on the one hand: “I contend that, as has been the case for 2000 years, these philosophical and theological beliefs are the main motivations for the belief in [extraterrestrial intelligence].”<sup>572</sup> Figures throughout history who defended unity, on the other hand, Tipler portrays as objective scientists (although he does make an exception for unity thinkers in the Medieval period). This dichotomy becomes evident in the way Tipler narrates historical events. He describes Whewell as, “the first person to take a critical *scientific* look at the empirical, as opposed to the philosophical or theological, evidence of extraterrestrial intelligence (authors italics).”<sup>573</sup> Tipler criticizes defenders of plurality for their lack of “a sense of history.” Tipler means that plurality proponents fail to recognize that they merely recycle the arguments of previous plurality defenders, without any critical reflection.<sup>574</sup>

Tipler seeks to undermine the ethos of the plurality defenders further, by connecting them to three discredited scientific theories: spontaneous generation, Laplace’s nebular hypothesis, and the great chain of being (an anti-Darwin belief, that preceded Darwin according to Arthur O. Lovejoy).<sup>575</sup> Presumably Tipler meant to discredit the idea of plurality through guilt by association; the pluralists believed these

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<sup>572</sup> Frank J. Tipler, "A Brief History of the Extraterrestrial Intelligence Concept," *Quarterly Journal of the Royal Astronomical Society* 22 (1981): 133; Tipler, "Extraterrestrial Intelligent Beings do not Exist," 143.

<sup>573</sup> Tipler, "A Brief History of the Extraterrestrial Intelligence Concept," 139.

<sup>574</sup> Ibid., 133.

<sup>575</sup> Tipler, "Extraterrestrial Intelligent Beings do not Exist," 279.

wrong ideas, so their support of plurality is equally suspect. Leaving aside the potentially *ad hominem* nature of this argument, Tipler does not mention unity thinkers' belief in these same discredited concepts.

Tipler's article selectively engages the links between discredited science and participants in the plurality debate. Proponents of unity often supported these doctrines as well, just as many plurality proponents opposed them. Whewell actually defended a modified version of the nebular hypothesis, in his book *Plurality of Worlds*, while many plurality defenders (like Brewster) not only rejected the nebular hypothesis, but actively castigated Whewell for relying on it.<sup>576</sup> Nor does Tipler mention that Whewell fiercely opposed Darwinism and supported a version of the great chain of being.<sup>577</sup> Similarly, Tipler points to Wallace's book *Man's Place in the Universe* to suggest that Darwinism demands unity, with no recognition of Wallace's significant back-tracking from orthodox Darwinism or the support of other Darwinians for plurality, including, most notably, Charles Darwin himself.<sup>578</sup> Tipler narrates events in way that denies plurality defenders scientific credibility, while elevating the credentials of unity proponents. This sets the stage for his characterization of plurality advocates as motivated primarily by extrascientific reasons.

Beyond Tipler's one-sided reporting of the scientific beliefs of the debate participants, he portrays defenders of plurality as religious fanatics. He accuses Brewster of going after Whewell with a "missionary zeal," by which he means

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<sup>576</sup> Brewster, *More Worlds than One*, 232.

<sup>577</sup> Shermer, *In Darwin's Shadow*, 204.

<sup>578</sup> Kottler, "Alfred Russel Wallace," 154-56; Crowe, *Extraterrestrial Life Debate*, 223-24.

Brewster behaved irrationally.<sup>579</sup> Tipler then attributes this same “missionary zeal” to Frank Drake’s defense of SETI.<sup>580</sup> He argues that Carl Sagan, Fred Hoyle, Frank Drake, A.G.W. Cameron, and other prominent believers in plurality practice a new religion based around salvation by an advanced alien race.<sup>581</sup> Tipler presents himself as part of a scientific corrective to the thousands-of-years-old mystical religion of plurality.<sup>582</sup> In this respect, he positions himself as another Whewell or Wallace, whom he champions as scientific purists. The truth of Tipler’s representation of modern day SETI defenders aside, he replicates the closed-minded commitment to his cosmology he accuses his opponents of having. His one-sided reading of the plurality debate reflects either his own lack of “a sense of history” or a purposeful slanting of events.

Although the *Quarterly Journal of the Royal Astronomical Society* did not have much readership outside a specialized audience, Tipler hoped his article would reach the wider public. He points to the lack of popular dissenting voices as reason for plurality’s ubiquity at the end of the eighteenth century and compares it to the modern day, “If there is no opposition to a view, it will become generally accepted whatever the evidence for it (witness the contemporary situation of [Extraterrestrial Intelligence]

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<sup>579</sup> Frank J. Tipler, "Additional Remarks on Extraterrestrial Intelligence," *Quarterly Journal of the Royal Astronomical Society* 22 (1981): 289.

<sup>580</sup> Ibid.

<sup>581</sup> Ibid., 288-89.

<sup>582</sup> In his defense, Tipler does provide quotes that make a compelling case that alien salvation does play a role in the way Sagan and others see the cosmos. Twenty-six years later George Basalla provides a much more in-depth version of this argument. Tipler also details the troubling history of his manuscript, as a justification for his claim that plurality defenders religiously guard their theory from attack. Tipler says that Carl Sagan refereed and rejected his article from two previous journals in a manner indicative of academic censorship. Ibid., 289. Like Whewell and Wallace before him, the problem emerges not from Tipler correctly pointing out the flaws of his opponents, but of his engaging in the same practices he criticizes.

in the popular press).”<sup>583</sup> Tipler’s concern for the public perception of alien life points to his opinion of the stakes of the debate. Rather than approach the existence of alien life as a technical question, best left to private debate between scientists, he sees his role as a public intellectual, countering the efforts of Sagan and others. It was not long before Tipler, now a professor of mathematical physics at Tulane University in New Orleans, got his wish that his ideas would be exposed to a larger audience.

In 1981, the popular science magazine *Physics Today* published an abridged version of his article.<sup>584</sup> The new adaptation, also titled “Extraterrestrial Intelligent Beings Do Not Exist,” presented the argument for unity in a more accessible format, although much of the metaphysical undertones were absent. The article condensed Tipler’s original thirty-six pages of arguments into three and replaces his myriad of references with a suggestion that readers interested in learning more view his original articles in the *Quarterly Journal of the Royal Astronomical Society*. A comic of the universe with a speech bubble coming from one tiny spec of space (presumably Earth) saying “Where is everybody?” accompanied the piece.<sup>585</sup> The *Physics Today* article brought Tipler one step closer to his goal of providing a popular venue for his work.

Tipler’s initial forays into the alien life debate had a major impact on the debate. Senator William Proxmire drew on Tipler’s arguments when he made the case that Congress should cut funding for SETI.<sup>586</sup> More importantly, Tipler reintroduced the idea that philosophical beliefs intertwined with the question of alien life. Tipler argues that pluralists historically have had religious and quasireligious motivations for

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<sup>583</sup> Tipler, "A Brief History of the Extraterrestrial Intelligence Concept," 139.

<sup>584</sup> Frank J. Tipler, "Extraterrestrial Intelligent Beings Do Not Exist," *Physics Today* 34, no. 4 (1981).

<sup>585</sup> *Ibid.*, 9.

<sup>586</sup> Dick, *The Biological Universe*, 498.

their scientific conclusions. He indicates that he wants to enter the public debate to correct the mistaken public belief in alien life. Although he hints at an ulterior motive of his own, he does not articulate the stakes of the debate for him, beyond a concern for scientific accuracy. Tipler's next endeavor would begin to build the case for the philosophical values associated with unity, providing both a philosophical and scientific rebuttal of the position of the pluralists.

### 5.3 THE ANTHROPIC PRINCIPLE

Six years after the initial publication of Tipler's article "Extraterrestrial Intelligent Beings Do Not Exist," Tipler again saw his unity ideas presented in a popular venue. He co-wrote the *Anthropic Cosmological Principle* with John D. Barrow, a professor of astronomy at Sussex University. Like Tipler, Barrow had impressive scientific credentials. By the year 1986, when the *Anthropic Cosmological Principle* was released, Barrow had published seventy-four articles, many in top-tier journals. In 1983, he co-wrote *The Left Hand of Creation*, a popular science book explaining the origins of the universe with Joseph Silk, an astronomy professor at the University of California Berkeley. Tipler and Barrow brought a scientific pedigree to their work that bolstered its credibility notwithstanding its content.

Their book merges the titular concept of the Anthropic Principle with the unity cosmology and uses this fusion as a defense of absolute values. Before one can understand how they deploy the unity cosmology it is important to understand the Anthropic Principle. Despite having many similarities with unity, the Anthropic



Principle exists as a distinct concept. The Anthropic Principle comes in a variety of forms, which Tipler and Barrow explore in the book. They defend a radical version of the-already-controversial Anthropic Principle, which connects human existence to the existence of the universe.

The authors identify four meanings of the Anthropic Principle, which they delineate into specific terms. The first, proposed in modern times by Princeton Physics Professor Robert Dicke, they refer to as the weak Anthropic Principle (WAP). The WAP claims that the universe has to be amenable to life; otherwise, no life would exist. The WAP amounts to little more than a tautology and Tipler and Barrow suggest it is, “in no way either spectacular or controversial.”<sup>587</sup> The strong Anthropic Principle (SAP) goes further than the WAP and says that not only do the conditions of the universe allow for intelligent life, but, “the Universe *must* have those properties which allow life to develop within it as some stage in its history” (my italics).<sup>588</sup> Tipler and Barrow acknowledge that the SAP often gets equated with intelligent design by a creator god, wherein a divinity creates the universe specifically for life.<sup>589</sup> Tipler and Barrow, however, defend a different version of the SAP, Princeton Professor of astrophysics John Wheeler’s participant Anthropic Principle (PAP), which says that intelligent observers, like humans, are necessary for a universe to exist.

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<sup>587</sup> Barrow and Tipler, *The Anthropic Cosmological Principle*, 16.

<sup>588</sup> Ibid., 21. This represents a twist on the way academics typically define SAP. SAP is usually defined to say that if the universe was substantially different than it is now that it would be impossible for intelligent life to emerge. Gardner, “WAP, SAP, PAP, & FAP.”

<sup>589</sup> The authors do not take a firm stand on the SAP justified by God. Instead they write that it “does not appear to be open either to proof or to disproof and is religious in nature.” Barrow and Tipler, *The Anthropic Cosmological Principle*, 22.

The PAP derives from one of the quirks of quantum mechanics, in which some scientists believe nothing can exist in a physical form before an observer witnesses it. Tipler and Barrow believe many universes exist, but universes without intelligent observers can only exist in a quantum (but not physical state).<sup>590</sup> The PAP has the incredibly counterintuitive implication that life that postdates the existence of the universe is responsible for the physical manifestation of the universe.<sup>591</sup> The likelihood for a universe to allow the evolution of observers, thus, selects for universes amenable to life to become physically manifest. This selection process explains the large number of physical laws and properties of our universe that seem tailor made for life (like water's unique characteristics and the overall composition of atomic matter), because a universe hostile to life will not develop observers and thus not move from a quantum to physical state.<sup>592</sup>

The elevation of humanity to cause, rather than effect of the universe appears compatible with the human-centric theme of the unity cosmology, although not identical to it. SAP does not necessitate human observers; alien intelligences could quantumly select the biofriendly traits for the universe. Tipler and Barrow vigorously deny the possibility of alien life, however. They rehash Tipler's version of Fermi's paradox as well as provide a series of biological arguments against the likelihood of intelligence developing.<sup>593</sup> At first the authors do not make clear the relevance of the absence of alien intelligence to the Anthropic Principle. It seems at first as though the

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<sup>590</sup> Ibid., 472-96.

<sup>591</sup> It would be wrong to dismiss the PAP solely on the grounds of its counter-intuitiveness, as many of the foundational ideas from quantum physics seem incredibly strange.

<sup>592</sup> Barrow and Tipler, *The Anthropic Cosmological Principle*, 505, 06, 10, 24-41.

<sup>593</sup> Ibid., 556-70, 76-600.

authors had simply added Tipler's original article on the lack of aliens as a chapter to an otherwise unrelated book. The sections on alien life seemed out of place with the broader thesis and philosopher J. J. C. Smart even suggests that they contradict the larger idea that life selects for biofriendly universes.<sup>594</sup> After all if intelligent observers select for the physical properties of the universe, then one could rightfully expect multitudinous observers. This brings us to the fourth form of the Anthropic Principle discussed by Tipler and Barrow, the Final Anthropic Principle (FAP).

The FAP states that once "intelligent information-processing" (by which they mean humanity to be succeeded by artificial intelligence) emerges it, "will never die out."<sup>595</sup> The FAP builds on the framework of the SAP, in other words, for the FAP to be true intelligent life must be necessary for the universe to exist. The FAP also relies on the absence of alien life, because if extraterrestrial intelligent life existed then humanity could be replaced as the quantum observers necessary for the universe. The FAP represents Tipler and Barrow's modern instantiation of the unity rhetoric of Plato, Whewell, and Wallace, although understanding exactly how requires a broader examination of the book.

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<sup>594</sup> J.J.C. Smart, "The Anthropic Cosmological Principle," *The Philosophical Quarterly* 37, no. 149 (1987).

<sup>595</sup> Barrow and Tipler, *The Anthropic Cosmological Principle*, 23. The idea that intelligent machines will replace humanity represents an obvious difference from earlier manifestations of the unity cosmology. One could read Tipler and Barrow's depiction of the future as one that denies the importance of humanity, because of our inevitable replacement by machines. This reading clashes with the way Tipler and Barrow view personhood, however. For them information represents the foundation of personhood, which means the creation of intelligent machines differs little from bearing new human children. Both represent extensions of human information and thus one should view them as equally children of humanity. As I will discuss later, Tipler believes a human can become functionally resurrected by having all of the data on its brain place onto a computer. The link between information with humanity does not apply to aliens, because by definition they do not have a connection to humanity. This chapter later presents more reasons that aliens undermine humanity's special place in the universe, but artificial intelligence would not.

## 5.4 THE SCIENTIFIC FRAME

Before one can examine the argument for teleology and absolute values embedded in their cosmology, it is important to understand the rhetorical frame within which Tipler and Barrow operate. Unlike Plato, Aquinas, Whewell, and Wallace, Tipler and Barrow write at a time when natural philosophy no longer exists as the primary academic discourse. Hostility to metaphysics faced Tipler and Barrow with the unique challenge of rhetorically appealing to unity without giving the appearance of being unscientific. In the beginning of their book they recognize the challenge and seek to forestall any claims against their objectivity. They write,

The authors are cosmologists, not philosophers. This has one very important consequence which the average reader should bear in mind. Whereas many philosophers and theologians appear to possess an emotional attachment to their theories and ideas which requires them to believe them, most scientists tend to regard their ideas differently. They are interested in formulating many logically consistent possibilities, leaving any judgement regarding their truth to observation. Scientists feel no qualms about suggesting different but mutually exclusive explanations for the same phenomenon. The authors are no exception to this rule and it would be unwise of the reader to draw any wider conclusions about the authors' views from what they read here.<sup>596</sup>

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<sup>596</sup> Ibid., 15.

Tipler and Barrow seek to maintain the aura of objective scientists crunching the data, rather than philosophizing. The passage amounts to an anti-rhetorical, rhetorical gambit, downplaying the importance of rhetoric in favor of hard science, at the same time making a rhetorical move to bolster their credibility.

Mary Midgley, a professor of Philosophy at Newcastle University, examines this passage and writes, “*What these authors hope to do is to import into metaphysics the kind of impartiality that comes naturally in the physical science, simply by handling it with scientific methods*” (author’s italics).<sup>597</sup> She makes a strong argument, but the passage does more than signal the inner intentions of the authors. Tipler and Barrow could have presented a scientific study of teleology without announcing they conducted an unbiased study. The passage lets the audience know that they should read the text as scientific, rather than a work of philosophy or even a book separated into distinct sections on science and philosophy. Tipler and Barrow paint a picture where they felt compelled to their conclusions by the raw data rather than their own beliefs. This establishes a framework that means the reader needs to confront and refute the science behind their argument or they risk the kind of, “emotional attachment to their theories and ideas” that Tipler and Barrow renounce.

The standard of scientific proof as the metric of argument places refutation beyond the ability of much of the general public who purchased the book, as well as many academics.<sup>598</sup> The length of the book alone, at over 700 pages, makes a close

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<sup>597</sup> Mary Midgley, *Science as Salvation: A Modern Myth and its Meaning* (New York: Routledge, 1992), 23.

<sup>598</sup> Well-educated authors writing about the book share the view that its science makes for a difficult read. David B. Myers, “New Design Arguments: Old Millian Objections,” *Religious Studies* 36, no. 2

reading a daunting task.<sup>599</sup> The authors include an enormous number of footnotes, both citations and further explanations, a fact noted in popular and academic reviews.<sup>600</sup> Tracking down all of their sources and reading them would take more effort than all but the most dedicated reader could sustain and reading the material cited would not ensure understanding. Much of the science exists beyond the comprehension of lay audiences; for example, long mathematical equations pepper the text. The book often reads as pieces of scientific journal articles meant for specialized audiences, rather than a work that would have public success. The standard of scientific refutation forecloses the avenues of response to all but the most educated readers.<sup>601</sup>

The difficulty of the text creates a structural authority that places the reader in a dependent relation to the authors. Of course difficulty alone does not guarantee ethos, much less readership. Tipler and Barrow employ a strategy where most of the philosophical implications of their work occur at the beginning and the end of the text in highly readable prose, which draws in the lay reader. The difficult to follow sections occur in the middle of the book. Most readers will likely skip over the math sections and not follow up on the footnotes, despite the central role they play in the book's argument. The text arouses a desire for a knowledgeable authority to do the

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(2000): 141; Paul A. Robinson Jr., "Is the Universe an Accident?: An Answer from Two Scientists," *Christian Science Monitor*, July 3, 1986.

<sup>599</sup> Even the authors recognize the unusual length of their book and begin with a joke, quoting the Duke of Gloucester's quip of, "Ah Mr. Gibbon, another damned, fat, square book. Always scribble, scribble, scribble, eh?" when he was presented with the second volume of *The Decline and Fall of the Roman Empire*. Barrow and Tipler, *The Anthropic Cosmological Principle*, v.

<sup>600</sup> Smart, "The Anthropic Cosmological Principle," 466; Timothy Ferris, "I Think, Therefore the Universe Is," *New York Times*, February 16, 1986; Robert Klee, "The Revenge of Pythagoras: How a Mathematical Sharp Practice Undermines the Contemporary Design Argument in Astrophysical Cosmology," *British Journal for the Philosophy of Science* 53, no. 3 (2002): 337.

<sup>601</sup> Wander, "The Rhetoric of Science," 227.

work of interpreting the scientific findings, which the authors then satisfy with their impressive credentials.<sup>602</sup>

Tipler and Barrow both hold doctorates in scientific fields and work at respected universities, which gives them a powerful ethos.<sup>603</sup> The fact that famous Princeton scientist John Wheeler endorsed the book in the forward, also heavily contributes to their aura of objectivity. As Robert Klee remarks, “the foreword was by none other than John Wheeler, [is] as sure a sign of the book’s scientific legitimacy as anything.”<sup>604</sup> Beyond the support of Robert Klee, the publication of the book by the prominent academic publisher Oxford University Press adds another layer of intellectual sanction. The difficulty of the text combined with the qualifications of the authors, means that most readers probably take for granted the accuracy of Tipler and Barrow’s scientific claims.<sup>605</sup>

Like Plato, Whewell, and Wallace, Tipler and Barrow employ the rhetorical appeal, “the scientific evidence speaks for itself.” The conventions of the time when Tipler and Barrow write, however, make this rhetorical framing even more important.<sup>606</sup> Wallace could include passages explicitly about humanity’s special place in the universe, because he wrote at the tail end of natural philosophy’s respectability in academia (the scientific community in particular). If Tipler and

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<sup>602</sup> Burke discusses the way forms can create audience desires and then satisfy them as a way to impart narrative (or in this case messages). Kenneth Burke, *Counter-statement* (Berkeley: University of California Press, 1968), 29-32.

<sup>603</sup> Tietge, *Rational Rhetoric*, 188.

<sup>604</sup> Klee, “The Revenge of Pythagoras,” 337. Of course that Klee feels the need to defend the legitimacy of the book in the first place reflects the fact that some prominent voices saw the book as deeply problematic.

<sup>605</sup> This occurs frequently in scientific argument. Science exists as the dominant intellectual paradigm, but the average citizen lacks a strong scientific literacy. This means the ethos of the scientist stands in for actual understanding of the specifics of the science. Segal and Richardson, “Scientific Ethos.”

<sup>606</sup> Weaver, “Dialectic and Rhetoric at Dayton, Tennessee”.

Barrow used the language Wallace did, it could be grounds for outright dismissal by scientific audiences.<sup>607</sup> The result of their attempt to avoid the appearance of unscientific claims, however, is that Tipler and Barrow's metaphysics become entwined with their physics to the point that accepting one requires accepting the other. The next section details the anthropocentric philosophical background for the supposedly objective and value-free Anthropic Principle.

## 5.5 THE UNITY RHETORIC

Because of the desire to appear objective the metaphysical implications of their scientific inquiry emerge only sporadically throughout the 700-page book and often through the words of other thinkers. The first two major sections of the book detail the history of teleology, a concept known primarily from philosophy and theology. Tipler and Barrow's history begins with the Old Testament and the ancient Greeks, a time when, "philosophy and science were conjoined and 'metaphysics' was concerned with the method as well as the meaning of science."<sup>608</sup> The connections between the Anthropic Principle and religion and science come through clearly in the history, which touches on figures already discussed in this dissertation like Plato, Democritus, and Aquinas, as well as a myriad of other important individuals (including advocates for the Anthropic Principle in nonwestern cultures). This history provides the

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<sup>607</sup> This will be evident in the reception of Tipler's book *The Physics of Immortality*, which I will discuss towards the end of the chapter. Frank J. Tipler, *The Physics of Immortality: Modern Cosmology, God, and the Resurrection of the Dead* (New York: Doubleday, 1994).

<sup>608</sup> Barrow and Tipler, *The Anthropic Cosmological Principle*, 28.



foundation for Tipler and Barrow's defense of the FAP as the key foundation of teleology, absolute values, and the meaningfulness the universe.

Tipler and Barrow acknowledge the potential philosophical implications of the Anthropic Principle in their first two sections where they detail the history of teleological arguments. They claim that the purpose of the history is their "aim to [show] that the Anthropic Principle is not the new and revolutionary idea that many scientists see it to be."<sup>609</sup> The eighty-two-page background, however, goes beyond establishing an argumentative precedent for their theory. It serves the function of establishing the stakes of the debate, with the Anthropic Principle associated with stable meaning and values in contrast to relativism. This rhetorical connection appears to philosophize in precisely the way the authors disavow in their earlier claim to scientific objectivity. The form of a historical primer helps obfuscate the break with their earlier statement, by allowing Tipler and Barrow to make philosophical arguments through the words of others.<sup>610</sup>

The clearest emergence of Tipler and Barrow's philosophy comes at the conclusion of the section on history, with nine whole pages of discussion on Teilhard de Chardin, the Christian mystic, philosopher, and self-proclaimed scientist.<sup>611</sup> Tipler and Barrow focus on Teilhard's concept of the Omega point. Teilhard believed that life evolved purposefully towards intelligence. The emergence of intelligence brought about the "noosphere," which Teilhard describes as the collective and integrated

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<sup>609</sup> Ibid., 108-09.

<sup>610</sup> Lessl argues that Carl Sagan uses historical symbolism to sneak metaphysical ideas into his "objective" science. Tipler and Barrow's rhetorical move is even cleverer, because they often do not need to invest history with symbolism as Sagan did, but rather they report the ideas of historical figures in a way that ultimately advances their own beliefs. Lessl, "Science and the Sacred Cosmos," 180.

<sup>611</sup> Barrow and Tipler, *The Anthropic Cosmological Principle*, 195-203.

thought of humanity. Over time the noosphere evolves as technology and socialization bring about more knowledge. Teilhard believed that eventually humanity would reach the Omega point, where the sum total of knowledge coalesces into a super-intelligent collective, an intellectual precursor to the FAP.

Tipler and Barrow go beyond summarizing Teilhard's view, however, and actually build on his theories. Tipler and Barrow acknowledge that some scientists attacked Teilhard as a mystic masquerading as a scientist, but Tipler and Barrow defend his work as scientific.<sup>612</sup> Tipler and Barrow do point to areas where new science has definitively disproved Teilhard, such as his understanding of information processing theory. Rather than discredit Teilhard, Tipler and Barrow suggest that these refutations prove that Teilhard made refutable and thus scientific claims. The authors then suggest ways that one can save Teilhard's overall theory with a few changes. Rather than locate the Omega point on Earth as Teilhard did, Tipler and Barrow claim that it could occur at the singularity of the universe (the point in time right before the universe collapses back into the state it existed before the big bang).<sup>613</sup> The authors indicate their own theory represents a modernized version of Teilhard's general thesis of evolution to totalizing intelligence.

Tipler and Barrow's move to modernize Teilhard's thesis does not represent a neutral scientific observation. Tipler and Barrow say plainly, "the basic framework of [Teilhard's] theory is really the only framework wherein the evolving Cosmos of

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<sup>612</sup> Ibid., 196.

<sup>613</sup> Ibid., 203.

modern science can be combined with an ultimate meaningfulness to reality.”<sup>614</sup>

Teilhard’s Omega point represents a cosmos of meaning, unlike the purposeless universe of the atomists that provides the foundation for the modern cosmos. In order to draw out this point, they contrast the meaningful existence inherent in the Omega point, with the possibility of “heat death,” which they describe as a prevailing view among scientists.

Tipler and Barrow maintain that in contrast to the Omega point, heat death obliterates the possibility for a meaningful universe. Heat death occurs far in the future when energy becomes evenly dispersed throughout the universe, resulting in the death of all life. The most famous reaction to heat death comes from Bertrand Russell, who Tipler and Barrow quote at length,

... the world which science presents for our belief is even more purposeless, more void of meaning, [than a world in which God is malevolent]. That Man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms; that no fire, no heroism, no intensity of thought and feeling, can preserve an individual life beyond the grave; that all the labours of the ages, all the devotion, all the inspiration, all the noonday brightness of human genius, are destined to extinction in the vast death of the solar system, and that the whole temple of Man’s achievement must inevitably be buried beneath the debris of a universe in ruins—all these

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<sup>614</sup> Ibid., 204.

things, if not quite beyond dispute, are yet so nearly certain, that no philosophy which rejects them can hope to stand. Only within the scaffolding of these truths, only on the firm foundation of unyielding despair can the soul's habitation be safely built. [Brackets and ellipses by Tipler and Barrow]<sup>615</sup>

Russell's view of heat death represents one of the most depressing passages in western philosophy. No human achievement, however spectacular, can escape the universe's ultimate fate of frozen silence. Russell did not ponder the prospects of heat death alone; Paul Davies claims it had a "profoundly depressing effect on generations of scientists and philosophers."<sup>616</sup> People find heat death depressing not because it will adversely affect any human now alive, but because it robs humanity of a future. Inevitable extinction denies a *telos* or purpose to our existence, which renders humanity insignificant and the universe meaningless.

For Tipler and Barrow, heat death represents the philosophical polar opposite of Teilhard's teleological and perfectible future. Teilhard's Omega point gives human life significance and purpose by building towards perfection; heat death renders human action meaningless because it portends a future of cosmic nothingness. It is important to note that heat death and the Omega point (understood as the emergence of an interconnected super intelligence) do not represent mutually exclusive possibilities. The future events' meanings for our present time, however, do conflict. This prompted Teilhard to posit the Omega point as mutually exclusive with heat death

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<sup>615</sup> Ibid., 167.

<sup>616</sup> Paul Davies, *The Last Three Minutes: Conjectures about the Ultimate Fate of the Universe* (New York: BasicBooks, 1994), 12.

because if the Omega point did not exist forever, “it would not be Omega.”<sup>617</sup> If a human created supercomputer inevitably collapsed in a universal heat death, then it lacked any meaning as far as Teilhard was concerned, just as the FAP only has meaning if humanity never goes extinct.

Tipler and Barrow end their discussion of the history of teleology with Teilhard and heat death and return to it in their final chapter, because the distinction between the two views of the future sets the terms of the debate for their own vision of the future embodied in the FAP. In the first pages, they reference Russell’s passage on heat death and quote Nobel prize-winning physicist Steven Weinberg making a very similar argument.<sup>618</sup> The FAP, however, offers hope to avoid this form of cosmic despair,

Although mankind--and hence life itself--is at present confined to one insignificant, doomed planet, this confinement may not be perpetual...once space travel begins, there are, in principle, no further physical barriers to prevent *Homo sapiens* (or our descendants) from eventually expanding to colonize a substantial portion, if not all, of the visible Cosmos. Once this has occurred, it becomes quite reasonable to speculate that the operations of all these intelligent beings could begin to affect the large scale evolution of the Universe. If this is true, it would be in *this* era--in the far future near the Final State of the Universe--that the true significance of life and intelligence would

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<sup>617</sup> Barrow and Tipler, *The Anthropic Cosmological Principle*, 201.

<sup>618</sup> Ibid., 613-14.

manifest itself. Present-day life would then have cosmic significance because of what future life may someday accomplish.<sup>619</sup>

Tipler and Barrow appear to accept Russell and Weinberg's central thesis that heat death does render human behavior pointless. Tipler and Barrow challenge the belief that heat death inevitably awaits humanity, however, and offer an alternative vision of the future where the actions of intelligent can shape the cosmos. The ability to enact change on a universal scale gives "cosmic significance" to the lives of present day humans.

Tipler and Barrow lay forth the cosmic changes they imagine saving future intelligence from destruction and infusing present day human life with value. In their model, human intelligence expands out to encompass the entire universe and creates a machine so powerful that it represents an Omega point in a truer sense than Teilhard's belief in super-intelligence on Earth.<sup>620</sup> As the last paragraph of their book they write,

life will have gained control of *all* matter and forces not only in a single universe, but in all universes whose existence is logically possible; life will have spread into all spatial regions in all universes which could logically exist, and will have stored an infinite amount of information, including *all* bits of knowledge which it is logically possible to know. And this is the end.<sup>621</sup>

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<sup>619</sup> Ibid., 614.

<sup>620</sup> Ibid., 664-77.

<sup>621</sup> Ibid., 677.

This picture of the future defies imagination, but its clear what is symbolizes, total domination of the universe by intelligence. As “life spread[s] into all spatial regions in all universes which could logically exist” the universe becomes synonymous with intelligence (the intellectual offspring of humanity today). For Tipler and Barrow intelligence infuses the universe with meaning; nature and the desires of intelligence become one. Aesthetically the universe becomes unity, as the Omega point incorporates all of its constituent parts.

Buried in a footnote they further unpack the meaning of this final passage, “a modern-day theologian might wish to say the totality of life at the Omega point is omnipotent, omnipresent, and omniscient!”<sup>622</sup> The Omega point represents humanity becoming god through science.<sup>623</sup> This technological singularity provides the perfect foundation for transcendent ethics throughout all time, just the way the orderly, crystalline, celestial objects of Plato’s *Timaeus* provided the model for human ethics.<sup>624</sup> Tipler and Barrow argue the FAP, with its Omega point, provides a scientific cosmological foundation for meaning and purpose in the lives of humanity.

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<sup>622</sup> Ibid., 382.

<sup>623</sup> Mary Midgley recognizes Tipler and Barrow’s book as a form of techno-salvation myth. Midgley, *Science as Salvation: A Modern Myth and its Meaning*.

<sup>624</sup> The figurative use of religious language in describing the Omega point gives scientific cover to the metaphysical ideas buried in the passage. The authors can always claim to have simply taken poetic license, which is bolstered by their claim that a “theologian” (not they) would describe the Omega point as “omnipotent, omnipresent, and omniscient!” Lessl, “The Culture of Science and the Rhetoric of Scientism,” 181.

## 5.6 ABSENT ALIENS

The previous sections demonstrate how Tipler and Wallace maintain a scientific style and present the FAP as a justification for teleology. This has obvious connections to the cosmological arguments of thinkers like Plato, Aquinas, Whewell, and Wallace, who held similar philosophical beliefs that connected these ideas to the structure of the universe. The FAP, however, is not the same as the absence of alien life central to the unity cosmology. One can read the fine-tuning of the universe discussed in *The Anthropic Cosmological Principle* as the only proof necessary of teleology and absolute values. Under this interpretation the discussion of the absence of aliens is a superfluous indulgence of Tipler's past work. I believe, however, that the unity cosmology represents a central component of Tipler and Barrow's argument.

Without unity, the FAP and the Omega point fail to necessitate meaning and purpose to the lives of humans. First, the Omega point by definition must be singular, even absent the technical question of whether two universal super computers could exist simultaneously. Only by achieving total knowledge does that computer gain the status of the Omega point, Omega being finality. The existence of two such computers may raise Teilhard's objection that absent singularity, "it would not be Omega." This means that to achieve the Omega point any intelligence would have to join in the effort.

The inclusion of alien life into the Omega point raises a host of difficult questions for Tipler and Barrow. The "alien" represents, by definition, an unknown factor. The idea of the Omega point represents an extrapolation of present technological trends into the future. Tipler and Barrow build their case for the Omega



point, by putting the future in the form of mathematical equations. The existence of aliens disturbs these neat equations by adding an unpredictable variable.

The addition of aliens to the cosmos forces Tipler and Barrow to explain what about humanity specifically, among all the life on earth, makes it the *telos* of the universe. Without confronting the alien question, beyond denying alien existence, Tipler and Barrow can rely on age old anthropocentrism to explain why humans alone and not, for example, humans, dolphins, octopi, worms, and/or trees represent the central focus of the cosmos. Aliens blur the line between humanity and other species, by forcing the question of what, if anything, makes humanity unique among animals.<sup>625</sup> Without intelligent aliens in the equation, Tipler and Barrow are free to assert that of the known life forms only humans and their robotic offspring can fulfill the demands of the FAP.

The existence of intelligent aliens also raises the possibility that humanity need not survive to create the Omega point, because some other race of intelligent observers could achieve the goal. In other words, the FAP becomes compatible with human extinction as long as some alien species survives to create the Omega point. This not only matters for our distant, distant offspring (be they organic or mechanical), but also for all humans living today. Tipler and Barrow assign our present day lives meaning based on their contribution to the Omega point. Absent a clear connection to this final goal, humanity lacks “cosmic significance.” Without future participation in the Omega point humanity again faces the bleak prospects of extinction, just as in the scenario of universal heat death (even if it occurs earlier through other means). The

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<sup>625</sup> Wendt and Duvall, "Sovereignty and the UFO."

prospect of human extinction returns the cosmic despair and purposelessness that Russell and others discuss, not for our distant descendants, but for all humans today.

Tipler and Barrow's connection of the absence of alien life to the FAP also provides some of the easiest-to-measure proofs of the theory. While they provide as substantial amount of evidence that they believe proves the fine-tuned nature of the universe, what constitutes fine-tuning is often a matter of interpretation. The absence or presence of intelligent alien life represents a much easier thing to determine objectively, given the proper knowledge.<sup>626</sup> By conflating human singularity and the FAP, Tipler and Barrow provide what they believe to be a more persuasive argument.

Beyond the absence of alien life's persuasion value, the very structure of Tipler and Barrow's argument for unity speaks to their broader concern for the special nature of humanity. They depend heavily on Fermi's paradox, which denies the existence of aliens because they have not contacted humanity, but Fermi's paradox presupposes, not proves, their teleological universe. The Soviet SETI scientists, in contrast to their American counterparts, highlighted the problem of radical difference when attempting to contact or understand the motivations of aliens.<sup>627</sup> Even though many Soviet scientists believed aliens certainly existed, they had doubts that we would have a means to communicate with them or recognize their attempts to communicate with us.<sup>628</sup> Furthermore, the complications of discovery and communication assume aliens

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<sup>626</sup> Of course, determining what constitutes "intelligent" or even "life" can be a tricky matter. Despite these concerns the endeavor still appears a much more straightforward task that reading purpose into the universal structure.

<sup>627</sup> Sheridan, "SETI's Scope", 67-93.

<sup>628</sup> Nicholas Rescher independently develops a similar argument focused on the likelihood that alien science differs radically from our own. Nicholas Rescher, "Extraterrestrial Science," in *Extraterrestrials: Science and Alien Intelligence*, ed. Edward Regis Jr. (Cambridge: Cambridge University Press, 1987).

have a desire to find and communicate with humanity in the first place. The idea that alien races could live their lives totally independent of any concern for humanity calls into question our species' cosmic importance. Tipler and Barrow's faith in the fact that aliens would have a compelling interest and the technical means to contact us, mirrors European disbelief at the possibility of two continents of humans living unaware of Europe. If one views humanity as peripheral, rather than central, to the cosmos, then it should come as no surprise that humanity has not been contacted by alien life.

The unity cosmology represents an essential component of Tipler and Barrow's version of the Anthropic Principle. Including aliens into the cosmos raises questions about the anthropocentric nature of Tipler and Barrow's claim that humans, rather than, say, dolphins, are the purpose of the universe. Intelligent aliens could construct an Omega point independent of humanity, which means that humans need not be the species that survive until the end of the universe. The absence of aliens represents an easily understood proof of human specialness in contrast to that derived from mathematical formulas, which makes it useful for defending the Anthropic Principle. Finally, Fermi's paradox fits within the larger narrative of humanity serving as the metaphorical center of the universe. Just like Plato and Aquinas to whom they acknowledge their deep intellectual debt, Tipler and Barrow connect unity to teleology.<sup>629</sup>

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<sup>629</sup> It is worth noting that at the time Tipler and Barrow released their book, the American academy was embroiled in a "culture war." Postmodernism, poststructuralism, and identity politics had challenged many of the practices of the university. The literary canon came under attack by those interested in increasing the presence of works by underrepresented groups. Historians challenged the ability of their profession to provide objective analysis of the past. Professors influenced by continental philosophers,

## 5.7 RECEPTION

An examination of the reception of *The Anthropic Cosmological Principle* helps to reveal the continued success of the unity cosmology. In his series of articles on Fermi's paradox, Tipler remarked that other scientists had a religious attitude towards his denial of intelligent alien life, which prompted them to defend plurality ferociously. His new book with Barrow not only touched on alien life, but teleology, religion, and the meaning of life. Given the gravity of the issues under discussion, the response to the book proved very positive. This chapter examines a variety of articles, books, and speeches inspired by Tipler and Barrow's book in order to gauge its rhetorical effectiveness.

The first set of responses I examine come from academia. I reviewed the 131 results from searching the title "*The Anthropic Cosmological Principle*" in JSTOR.<sup>630</sup> I choose JSTOR because it is a premier database of over 500 academic research journals, which span across academic disciplines and tracks many journals back well before the mid-1990s. This should provide a representative collection of the academic uses and criticisms of the book.<sup>631</sup>

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like Michel Foucault, Jean-François Lyotard, and Jacques Derrida attacked the possibility of "Truth." Whether or not they intended it Tipler and Barrow's work serves a rebuke to these modern forms of relativism by defending the possibility of absolute values, absolute knowledge, and an absolute future for humanity. Peter Novick, *That Nobel Dream: The 'Objectivity Question' and the American Historical Profession* (Cambridge: Cambridge University Press, 1988); Allan Bloom, *The Closing of the American Mind* (New York: Simon and Schuster, 1987).

<sup>630</sup> Roger C. Schonfeld, *JSTOR: A History* (Princeton, NJ: Princeton University Press, 2003).

<sup>631</sup> Lots of recent scholarship justifies using book reviews to assess reception. Leah Ceccarelli, "A Hard Look at Ourselves: A Reception Study of Rhetoric of Science," *Technical Communication Quarterly* 14, no. 3 (2005): 257–65; James L. Machor, "The American Reception of Melville's Short Fiction in the 1850s," in *New Directions in American Reception Study*, ed. Philip Goldstein and James L. Machor (New York: Oxford University Press, 2008), 87–98; Steven Mailloux, "Judging and Hoping: Rhetorical Effects of Reading about Reading," in *New Directions in American Reception Study*, ed. Philip

I found six reviews of the book, with four being overall positive.<sup>632</sup> Joseph Silk writing in one of the top two academic science journals, called the book “a marvelous treasure trove.”<sup>633</sup> Philosopher Michael Heller appeared equally enamored with the book and wrote, “Nobody interested in philosophical aspects of modern cosmology, or modern science in general, could easily be excused from reading this book.”<sup>634</sup> *The Anthropic Cosmological Principle* even received a positive review in the art journal *Leonardo*, with James Goldman highlighting the book’s aesthetic connections, before declaring it “a definitive and indispensable resource.”<sup>635</sup>

Of the remaining two reviews, one opposed the book and the other gave a relatively neutral account. The negative review came from a biologist, who was deeply unsettled by Tipler and Barrow’s defense of teleology. He went so far as to question the sincerity of Tipler and Barrow’s arguments and stated, “assuming that the book was intended to be provocative, it is an unequivocal success.”<sup>636</sup> Given the book’s coverage of so many controversial topics one would expect many more such comments than actually occurred. The neutral account came from a literary journal, much later than the other reviews and situated the book among other books about scientific cosmology.<sup>637</sup>

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Goldstein and James L. Machor (New York: Oxford University Press, 2008), 23-32; Kenneth M. Roemer, "Placing Readers at the Forefront of Nowhere: Reception Studies and Utopian Literature " in *New Directions in American Reception Study*, ed. Philip Goldstein and James L. Machor (New York: Oxford University Press, 2008), 99-119.

<sup>632</sup> Joseph Silk, "New Series," *Science* 232, no. 4753 (1986); Michael Heller, *The Review of Metaphysics* 40, no. 3 (1987); Smart, "The Anthropic Cosmological Principle."; James A. Goldman, *Leonardo* 21, no. 3 (1988).

<sup>633</sup> Silk, "New Series," 1036.

<sup>634</sup> Heller: 565.

<sup>635</sup> Goldman: 334.

<sup>636</sup> Preston Cloud, *The Quarterly Review of Biology* 62, no. 1 (1987): 64.

<sup>637</sup> Monroe K. Spears, "Review: Cosmology and the Common Reader," *Sewanee Review* 99, no. 1 (1991): 113-21.

*The Anthropic Cosmological Principle* made its way on the book lists of philosophy, science and philosophy of science journals.<sup>638</sup> The influence of the book becomes apparent when one examines the way other scholars cite it. Often academics cite the book for scientific purposes absent any reference to its broader themes, typically Tipler and Barrow's description of how the universe emerged from nothing.<sup>639</sup> Historians cite Tipler and Barrow for anecdotes of important scientific figures or their defense of Whig history.<sup>640</sup> The JSTOR results also reveal exposure of the book within the academic artistic community. The book inspired a poem, a new theme for science fiction, and an innovative approach to music.<sup>641</sup> And, of course, authors cited the book to reference the claim that the universe is finely tuned for human existence.<sup>642</sup> The achievement of so many citations, much less citations across

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<sup>638</sup> "Recent Publications in Philosophy Source," *Noûs* 20, no. 4 (1986); "New Titles," *BioScience* 38, no. 1 (1988); "Recent Publications," *The British Journal for the Philosophy of Science* 37, no. 3 (1986).

<sup>639</sup> I. Prigogine and J. Geheniau, "Entropy, Matter, and Cosmology," *Proceedings of the National Academy of Sciences of the United States of America* 83, no. 17 (1986): 6247; William Lane Craig, "The Origin and Creation of the Universe: A Reply to Adolf Grünbaum," *The British Journal for the Philosophy of Science* 43, no. 2 (1992): 239; Adolf Grünbaum, "Narlikar's 'Creation' of the Big Bang Universe Was a Mere Origination," *Philosophy of Science* 60, no. 4 (1993): 638, 41-42; Robert J. Deltete and Reed A. Guy, "Hartle-Hawking Cosmology and Unconditional Probabilities," *Analysis* 57, no. 4 (1997): 304, 13; William Lane Craig, "A Swift and Simple Refutation of the 'Kalam' Cosmological Argument?," *Religious Studies* 35, no. 1 (1999): 65; David S. Oderberg, "Temporal Parts and the Possibility of Change," *Philosophy and Phenomenological Research* 69, no. 3 (2004): 686; Adolf Grünbaum, "Creation as a Pseudo-Explanation in Current Physical Cosmology," *Erkenntnis* 35, no. 1/3 (1991); William Lane Craig, "The Caused Beginning of the Universe: A Response to Quentin Smith," *British Journal for the Philosophy of Science* 44, no. 4 (1993): 635, 29, 31-33.

<sup>640</sup> Brett Clark, John Bellamy Foster, and Richard York, "The Critique of Intelligent Design: Epicurus, Marx, Darwin, and Freud and the Materialist Defense of Science," *Theory and Society* 36, no. 6 (2007): 526; Mary Jo Nye, "Temptations of Theory, Strategies of Evidence: P. M. S. Blackett and the Earth's Magnetism, 1947-52," *The British Journal for the History of Science* 32, no. 1 (1999): 89-90; Colin A. Russell, "Presidential Address: 'Rude and Disgraceful Beginnings': A View of History of Chemistry from the Nineteenth Century," *The British Journal for the History of Science* 21, no. 3 (1988): 291.

<sup>641</sup> Barry Mazur, *Harvard Review*, no. 16 (1999): 145; David Rosenboom, "Propositional Music: On Emergent Properties in Morphogenesis and the Evolution of Music. Part I: Essays, Propositions and Commentaries," *Leonardo* 30, no. 4 (1997): 296; David N. Samuelson, "Review: Botching the Science in Science Fiction," *Science Fiction Studies* 19, no. 1 (1992): 104.

<sup>642</sup> Mark Colyvan, Jay L. Garfield, and Graham Priest, "Problems with the Argument from Fine Tuning," *Synthese* 145, no. 3 (2005): 334-35; Neil A. Manson, "Anthropocentrism and the Design Argument," *Religious Studies* 36, no. 2 (2000): 171-72; D. J. Bartholomew, "Probability, Statistics and

a plethora of disparate disciplines, sets *The Anthropic Cosmological Principle* apart from all but the most successful academic works.

Most interesting for this study, however, academics began using the book to make Platonic claims to truth. B. L. Hebblethwaite cites the book's arguments of fine tuning as a proof for the God hypothesis.<sup>643</sup> James Applewhite, unhappy with the "postmodern" state of art," uses the Anthropic Principle to call for a return to transcendent universal values within aesthetics.<sup>644</sup> Stuart N. Hart begins his case to extend more rights to children with a appeal to the Anthropic Principle,

recent studies of the origins and progress of the universe have led cosmologists to postulate the "Anthropic Principle" to respect accumulating evidence that the universe embodies a design and fine-tuning mechanisms directed toward the achievement human life (Barrow 1998). Evidently we are not the insignificant product of a chance occurrence in the backwater of evolution. These facts suggest that there is something quite special about human beings, something that deserves respect.<sup>645</sup>

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Theology," *Journal of the Royal Statistical Society* 151, no. 1 (1988): 140-41; M. A. B. Whitaker, "On Hacking's Criticism of the Wheeler Anthropic Principle," *Mind* 97, no. 386 (1988): 262; Timothy McGrew, Lydia McGrew, and Eric Vestrup, "Probabilities and the Fine-Tuning Argument: A Sceptical View," *Mind* 110, no. 440 (2001): 1027; B. L. Hebblethwaite, "Mellor's 'Bridge-Hand' Argument," *Religious Studies* 22, no. 3/4 (1986): 477; Peter Forrest, "Aesthetic Understanding," *Philosophy and Phenomenological Research* 51, no. 3 (1991): 538; Roger White, "Does Origins of Life Research Rest on a Mistake?," *Noûs* 41, no. 3 (2007): 457.

<sup>643</sup> Hebblethwaite, "Mellor's 'Bridge-Hand' Argument," 477.

<sup>644</sup> James Applewhite, "Postmodernist Allegory and the Denial of Nature," *Kenyon Review* 11, no. 1 (1989): 8.

<sup>645</sup> Stuart N. Hart, "Making Sure the Child's Voice Is Heard," *International Review of Education* 48, no. 3/4 (2002): 251.

Given the passion of Hart's plea for children's rights in the rest of his article, it is difficult to imagine him changing his mind based on new scientific data about the origin of the universe. One has to wonder if cosmology informs Hart's (and the other previous examples) opinion on child welfare or whether he latched onto Tipler and Barrow's cosmology as a defense of his preexisting beliefs.<sup>646</sup> Independent of these authors' actual beliefs on the universe's relation to values, they all felt that Tipler and Barrow's version of the Anthropic Principle lent credence to their argument.

The academic uptake of Tipler and Barrow's work for ethical and religious purposes goes beyond the JSTOR sample. William Gairdner includes it as a proof of absolute values against what he sees as the current postmodern agenda of politics and philosophy.<sup>647</sup> On the importance of the cosmic structure to philosophy he writes,

Some highly respected physicists and mathematicians go much further. They are persuaded that *the entire cosmos came into existence so that human consciousness would eventually arise to observe it!* We may have gotten bumped from the centre of our own solar system over recent centuries, but such new and fascinating modern views argue that we belong right back at the centre again.... [T]he general direction of today's scientific community and, therefore, of the public mind – and certainly of public education, which we must assume to reflect that mind – has strongly run against this idea. We increasingly describe ourselves in definatly *materialistic, atheistic, and*

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<sup>646</sup> Tipler and Barrow make the claim that Herbert Spencer modeled his cosmology after his political beliefs. Barrow and Tipler, *The Anthropic Cosmological Principle*, 188.

<sup>647</sup> William D. Gairdner, *The Book of Absolutes: A Critique of Relativism and a Defense of Universals* (London: Mc-Gill-Queen's University Press, 2008), 101-04.



therefore, *relativistic* terms.... The bleakness of this view could hardly be better expressed than by Harvard astronomer Margaret Geller, who asks: “Why should the universe have a point? What point? It’s just a physical system, what point is there?” ... when there is no point to anything, relativism rules. [author’s italics]<sup>648</sup>

Gairdner recognizes the power of the Anthropic Principle to influence social values. Its ability to return humanity to the “centre” of the universe, reverses what he sees as moral decline rather than scientific error. Errol E. Harris wrote two books that explored the religious and philosophical implications of Tipler and Barrow’s Anthropic Principle.<sup>649</sup> Harris’s book argues that the PAP and SAP represent a natural argument for absolute values and design (in his second book he makes it clear that by design he means the truth of Christianity).<sup>650</sup> M. A. Corey wrote another defense of God, teleology, and absolute values that depends on Tipler and Barrow’s book.<sup>651</sup> Unsurprisingly, given their religious conclusions, both Harris and Corey reject Tipler and Barrow’s secular Omega point and replace it with a religious event.<sup>652</sup> Despite the move to desecularize (or resacralize) Tipler and Barrow’s arguments, however, the same argumentative framework undergirds their positions.

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<sup>648</sup> Ibid., 11.

<sup>649</sup> Errol E. Harris, *Cosmos and Theos: Ethical and Theological Implications of the Anthropic Cosmological Principle* (Atlantic Highlands, N.J.: Humanities Press, 1992); Errol E. Harris, *Cosmos and Anthropos: A Philosophical Interpretation of the Anthropic Cosmological Principle* (London: Humanities Press International, 1991).

<sup>650</sup> Importantly, Harris also denies the likelihood of intelligent alien life, citing Tipler and Barrow as his only source. Harris, *Cosmos and Anthropos*, 9.

<sup>651</sup> M. A. Corey, *God and the New Cosmology: The Anthropic Design Argument* (Lanham: Rowman & Little, 1993).

<sup>652</sup> Harris, *Cosmos and Theos*, 22, 199; Corey, *God and the New Cosmology*, 187-88.

## 5.8 EXPLAINING THE SUCCESS

It is worth exploring why *The Anthropic Cosmological Principle* had the impact that it did on the academic world. John Leslie had made the connection between the God hypothesis and the Anthropic Principle several years earlier with little fanfare.<sup>653</sup> A JSTOR search for his article returns only 17 results, including the original article and three other articles by John Leslie.<sup>654</sup> Of the remaining 13 articles, nine overlap with citations of Tipler and Barrow's book, which suggests interest in Leslie's work did not grow until after the publication of the *Anthropic Cosmological Principle*.<sup>655</sup> Five of the thirteen share a footnote with Tipler and Barrow's book.<sup>656</sup> As for the results that do not overlap with citations of *The Anthropic Cosmological Principle*, one is the table of contents from the issue of *The American Philosophical Quarterly* containing the original article.<sup>657</sup> Another hit comes from a series of corrected errors from the

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<sup>653</sup> John Leslie, "Anthropic Principle, World Ensemble, Design," *American Philosophical Quarterly* 19, no. 2 (1982).

<sup>654</sup> John Leslie, "Observership in Cosmology: The Anthropic Principle," *Mind* 92, no. 368 (1983); John Leslie, "Anthropic Explanations in Cosmology," *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association* 2986 (1986); John Leslie, "Mackie on Neoplatonism's 'Replacement for God'," *Religious Studies* 22, no. 3/4 (1986).

<sup>655</sup> Bartholomew, "Probability, Statistics and Theology," 141; John Jefferson Davis, "The Design Argument, Cosmic 'Fine Tuning,' and the Anthropic Principle," *International Journal for Philosophy of Religion* 22, no. 3 (1987): 141; Barry Whitney, "Divine Persuasion and the Anthropic Argument," *The Personalist Forum* 14, no. 2 (1998): 144; Murdith McLean, "Residual Natural Evil and Anthropic Reasoning," *Religious Studies* 27, no. 2 (1991): 185; Hebblethwaite, "Mellor's 'Bridge-Hand' Argument," 477; Rodney D. Holder, "Fine-Tuning, Multiple Universes and Theism," *Noûs* 36, no. 2 (2002); Patrick A. Wilson, "What Is the Explanandum of the Anthropic Principle?," *American Philosophical Quarterly* 28, no. 2 (1991); John Earman, "The Sap Also Rises: A Critical Examination of the Anthropic Principle," *American Philosophical Quarterly* 24, no. 4 (1987); Joseph M. Zycinski, "The Anthropic Principle and Teleological Interpretations of Nature," *The Review of Metaphysics* 41, no. 2 (1987).

<sup>656</sup> Bartholomew, "Probability, Statistics and Theology," 141; Davis, "The Design Argument, Cosmic 'Fine Tuning,' and the Anthropic Principle," 141; Whitney, "Divine Persuasion and the Anthropic Argument," 144; McLean, "Residual Natural Evil and Anthropic Reasoning," 185; Hebblethwaite, "Mellor's 'Bridge-Hand' Argument," 477.

<sup>657</sup> "Volume Information," *American Philosophical Quarterly* 19, no. 1 (1982).

article, in a later issue of *The American Philosophical Quarterly*.<sup>658</sup> The next result turns up only a mention of the title in a list of recently released philosophy articles.<sup>659</sup> This leaves only one article that cites Leslie's article without reference to Tipler and Barrow.<sup>660</sup>

Given the similarity of their arguments, the difference between Tipler and Barrow's 131 results on JSTOR and Leslie's 17 cries out for explanation. The medium of the two pieces, certainly, represents a contributing factor. Leslie's piece came in the form of a journal article meant for specialized audiences; Tipler and Barrow's book became a popular success, making it more visible across academic disciplines. Tipler also proselytized for his views, attending philosophy conferences and presenting primers specifically designed for non-scientists academics to incorporate the Anthropic Principle in their work.<sup>661</sup> The length allowed Tipler and Barrow to cover a range of topics, reflected in the diversity of the ways others cite them. I do not think this accounts for the entirety of the difference, however. The articles and books that use the Anthropic Principle to defend absolute moral values cite Tipler and Barrow and not Leslie, unless the works explicitly defend religion.<sup>662</sup>

Tipler and Barrow's book epitomizes a more rhetorically palatable defense of teleology. For starters Tipler and Barrow's work rhetorically performs the scientific objectivity that they claim in their introduction, as I detailed above. The fact that so many scientific journals cite the book for its discussion of physics, independent of any

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<sup>658</sup> "Corrigenda to Drengson and Leslie," *American Philosophical Quarterly* 19, no. 4 (1982).

<sup>659</sup> "Current Periodical Articles," *The Review of Metaphysics* 35, no. 4 (1982): 921.

<sup>660</sup> Dennis Temple, "Hume's Logical Objection to the Argument from Design Based on the Uniqueness of the Universe," *Religious Studies* 28, no. 1 (1992).

<sup>661</sup> Frank J. Tipler, "The Anthropic Principle: A Primer for Philosophers," *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association* 1988, no. 2 (1988).

<sup>662</sup> Corey, *God and the New Cosmology*; Hebblethwaite, "Mellor's 'Bridge-Hand' Argument."

reference to teleology suggests that scientists take the work seriously. This in turn gives those that cite the book in defense of absolute moral values or teleology, scientific authority. The “objective,” “hard science” of Tipler and Barrow makes their work appear more legitimate than Leslie’s philosophizing.

The non-religious nature of the book may have even been a boon to religious academics. William Lane Craig, a theist, takes issue with Tipler and Barrow because, “the thrust of the book’s argument is in the end anti-theistic,” but proclaims, “I have already seen this book cited by two prominent philosophers of religion in support of the teleological argument.”<sup>663</sup> Craig, like the unnamed “prominent philosophers” Craig cites and many others, uses Tipler and Barrow’s work as a starting point to defend religion. Craig does not need to spend much time responding to Tipler and Barrow’s opposition to the design argument, because said opposition barely exists in the book.<sup>664</sup> As we will see later in this chapter, this lack of opposition may well be by design. To put things another way, Tipler and Barrow present metaphysics in the guise of physics, which appeals to the religious and nonreligious alike. As Earman notes, “my concern is with attempts to wrap PAP [the belief that observers create the physical universe] in the cloak of scientific respectability. These attempts amount to no more than hand waving.”<sup>665</sup> What Earman dismissively refers to as “hand waiving,” actually constitutes a successful rhetorical strategy to coopt the respectability of science. Law Professor Jeffrey F. Addicott even proposed the Anthropic Principle, in the style of Tipler and Barrow, as an acceptable compromise to

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<sup>663</sup> William Lane Craig, “Barrow and Tipler on the Anthropic Principle vs. Divine Design,” *The British Journal for the Philosophy of Science* 39, no. 3 (1988): 389.

<sup>664</sup> Ibid., 395.

<sup>665</sup> Earman, “The Sap Also Rises,” 313.

teach in public schools, instead of intelligent design. Addicott's argument: "the doctrine is recognized as a legitimate scientific axiom within the scientific community."<sup>666</sup> Tipler and Barrow's scientific style allowed a cover for theists, absent in more traditional design arguments.

Beyond the credibility gained by a scientific approach, Tipler and Barrow's version of the Anthropic Principle likely gained adoption because it catered to human vanity. Tipler and Barrow acknowledge that any intelligent observer could represent the catalyst that causes a universe to become actual; however, throughout the book they vigorously deny the likelihood of intelligent alien life. The privileging of intelligent observers combined with the belief that humanity represents the only intelligent observers positions humanity as critical to the cosmos. In a quote that reflects both the need for scientific credibility and the absence of aliens, Gairdner writes,

For it was the hardcore scientists like Copernicus and Galileo who inadvertently drove us out of the centre of the universe as it was then conceived, and now, as we shall see, it is the hardcore scientists [Tipler and Barrow] suggesting we belong back at the centre again.<sup>667</sup>

The connection to scientific credibility should be obvious. "Hardcore scientists" engineered the Copernican revolution, therefore a counter paradigm must also emerge

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<sup>666</sup> Jeffrey F. Addicott, "Storm Clouds on the Horizon of Darwinism: Teaching the Anthropic Principle and Intelligent Design in the Public Schools," *Ohio State Law Journal* 63 (2002): 1595.

<sup>667</sup> Gairdner, *The Book of Absolutes*, 101.

from scientists. The quote does not mention aliens specifically, but the desire for a return to the “centre” speaks to a Platonic cosmology free of alien life. While humanity cannot literally hold a place in the center of the universe, it can metaphysically, as Whewell and Wallace suggest.

Leslie, by contrast, goes out of his way to disconnect *Anthros* (humanity) from the Anthropic Principle. He even suggests the new name of the “Psychocentric Principle,” which would include all intelligent life.<sup>668</sup> Leslie’s formulation of the Psychocentric Principle likely lacked the appeal of Tipler and Barrow’s for this reason. The psychocentric principle does not return humanity to the center of the universe.

*The Anthropic Cosmological Principle*’s accessibility, both in writing style and availability, scientific credibility, and focus on humanity, made it a player across disciplines in academia. The enduring success of any academic book written in the last three decades, remains a rarity. For Tipler and Barrow’s work to achieve such attention across disciplines over such a long period of time, represents a remarkable feat. *The Anthropic Cosmological Principle* did not just succeed within academia, it spilled over into the public consciousness.

## 5.9 PUBLIC RECEPTION

*The Anthropic Cosmological Principle* had an impact beyond the confines of academia. The book became a bestseller, a difficult task for any scientific text, much

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<sup>668</sup> Leslie, "Anthropic Principle, World Ensemble, Design," 144.

less one with so many opaque concepts.<sup>669</sup> The popularity of the book helped expose many new people to the idea of a human-focused cosmology. While scholars debated the Anthropic Principle going back to the middle of the twentieth century, Tipler and Barrow's book brought it into the public realm. As a writer for the *Hamilton Spectator* put it, "The Anthropic Cosmological Principle, co-authored with Frank J. Tipler in 1986, took 'anthropic principle' from the pages of obscure journals and introduced it to popular culture."<sup>670</sup>

The idea of the Anthropic Principle had obvious appeal to defenders of religion outside the confines of academia. As previously mentioned, William Craig wrote that the Anthropic Principle represents a proof of God in academic journals. Craig also makes the same argument, in more generally accessible language, on his website.<sup>671</sup> The self-proclaimed purpose of his website is inform the "public arena," in order,

- to provide an articulate, intelligent voice for biblical Christianity in the public arena.
- to challenge unbelievers with the truth of biblical Christianity.
- to train Christians to state and defend Christian truth claims with greater effectiveness.<sup>672</sup>

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<sup>669</sup> Barbour, "Why We Should Fear Vast Change."

<sup>670</sup> "The Anthropic Principle," *The Hamilton Spectator* March 17, 2006.

<sup>671</sup> William Lane Craig, "The Teleological Argument and the Anthropic Principle," *Reasonable Faith*, <http://www.reasonablefaith.org/site/News2?page=NewsArticle&id=5179>.

<sup>672</sup> "Our Mission," *Reasonable Faith*, <http://www.reasonablefaith.org/site/News2?page=NewsArticle&id=5299>.

Craig not only talked about the Anthropic Principle on the website. He travels the country lecturing at colleges or debating atheists on the question of God. The Anthropic Principle represents a core of his argument in these public presentations.<sup>673</sup> While Craig represents a player in the academic debate about the Anthropic Principle, one should have little doubt that his larger interest lies in using the idea to spread the Christian faith.

Secular figures also had use for Tipler and Barrow's Anthropic Principle. The President of the Czech Republic, Vaclav Havel, made the Anthropic Principle a central part of his speech when he received the prestigious Liberty Medal on July 4<sup>th</sup> 1994 at Independence Hall in Philadelphia. He received the medal for his inspiration of the velvet revolution in Czechoslovakia, which peacefully overthrew the Communist regime. At the time of the speech, Havel held the position of President in the newly created Czech Republic. Previously he had been the last President of Czechoslovakia, but had stepped down, because he did not want to preside over the split of the country. In the early nineties other former Communist countries like Yugoslavia were also being torn apart by ethnic conflicts (although much more violently). It's clear from the content of his Liberty Medal speech that a concern for social fragmentation occupied his mind.

Havel begins by claiming that the world currently lacks a stable foundation for absolute ethics:

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<sup>673</sup> William Lane Craig, "Question 97: Subject: Scepticism Quebecois," *Reasonable Faith*, <http://www.reasonablefaith.org/site/News2?page=NewsArticle&id=6937>.



The same thing is true of nature and of ourselves. The more thoroughly all our organs and their functions, their internal structure, and the biochemical reactions that take place within them are described, the more we seem to fail to grasp the spirit, purpose, and meaning of the system that they create together and that we experience as our unique "self". And thus today we find ourselves in a paradoxical situation. We enjoy all the achievements of modern civilization that have made our physical existence on this earth easier so in many important ways. Yet we do not know exactly what to do with ourselves, where to turn. The world of our experiences seems chaotic, disconnected, confusing. There appear to be no integrating forces, no unified meaning, no true inner understanding of phenomena in our experience of the world. Experts can explain anything in the objective world to us, yet we understand our own lives less and less. In short, we live in the postmodern world, where everything is possible and almost nothing is certain.<sup>674</sup>

Havel argues that this lack of grounding has resulted in "cultural conflicts" and "tribal cults" that threaten the "survival of a civilization." He likely refers to the ethnic conflicts occurring in the former Yugoslavia and elsewhere. He uses the Anthropic Principle as a 'transcendent' grounding that allows for a universal ethic that can prevent "tribal" conflicts.

As a solution to the problems of cultural break down Havel looks to the Anthropic Principle,

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<sup>674</sup> Havel, "The New Measure of Man."

I think the Anthropic Cosmological Principle brings to us an idea perhaps as old as humanity itself: that we are not at all just an accidental anomaly, the microscopic caprice of a tiny particle whirling in the endless depth of the universe. Instead, we are mysteriously connected to the entire universe, we are mirrored in it, just as the entire evolution of the universe is mirrored in us.

Until recently, it might have seemed that we were an unhappy bit of mildew on a heavenly body whirling in space among many that have no mildew on them at all. This was something that classical science could explain. Yet, the moment it begins to appear that we are deeply connected to the entire universe, science reaches the outer limits of its powers. Because it is founded on the search for universal laws, it cannot deal with singularity, that is, with uniqueness. The universe is a unique event and a unique story, and so far we are the unique point of that story. But unique events and stories are the domain of poetry, not science. With the formulation of the Anthropic Cosmological Principle, science has found itself on the border between formula and story, between science and myth. In that, however, science has paradoxically returned, in a roundabout way, to man, and offers him - in new clothing - his lost integrity. It does so by anchoring him once more in the cosmos.<sup>675</sup>

Havel uses the singularity inherent in the Anthropic Principle to push for human singularity. Although he does not state it explicitly, a plurality cosmology would

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<sup>675</sup> Ibid.

justify the dangerous separatism he fears will engulf the globe in violence. The Anthropic Principle not only elevates humanity above an “unhappy bit of mildew,” but also connects all people together.

Havel clearly grasps the rhetorical power of the unity cosmology as an argument against relativism. He recognizes the ancient roots of the argument and claims that it can “anchor” humanity. He appreciated the rhetorical power of the Anthropic Principle so much that he delivered a very similar speech in Washington on October 3, 1997, after he received the Fulbright Prize<sup>676</sup> Beyond those watching the initial speech several major newspapers published the text of Havel’s speech, giving a wide platform to Tipler and Barrow’s ideas.<sup>677</sup>

The academic and popular uptake of Tipler and Barrow’s work demonstrates the staying power of the unity cosmology even in modern times. Theists, philosophers, artists, and politicians all found the Anthropic Principle a useful tool to persuade others of their beliefs in absolute values. Perhaps the most bizarre and forthright deployment of Tipler and Barrow’s Anthropic Principle comes from Tipler himself, not in the original book *The Anthropic Cosmological Principle*, but in his later works.

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<sup>676</sup> Vaclav Havel, "From Plato to NATO," *The Herald*, January 31, 1998.

<sup>677</sup> Vaclav Havel, "Looking at the World Through Post-modern Eyes," *Palm Beach Post*, July 14, 1994; Havel, "The New Measure of Man."; Vaclav Havel, "Our Changing Times, and the New Measure of Man," *Seattle Post-Intelligencer*, July 10, 1994.

## 5.10 TIPLER'S LATER WORK

Tipler and Barrow present, at least the facade, of disinterested scientists in *The Anthropic Cosmological Principle*. They leave the implications of the Anthropic Principle rather vague beyond its connection to teleology generally. In Tipler's book *Physics of Immortality* (1994), he much more clearly defines the stakes of the debate over cosmology.<sup>678</sup> The reception of *The Anthropic Cosmological Principle* appears largely unaffected by Tipler's *The Physics of Immortality*, as very few of the sources cited above mention it. Nor does it appear that the book proved as big a commercial success as *The Anthropic Cosmological Principle*.<sup>679</sup> A brief examination of the *The Physics of Immortality*, will, however, help elucidate Tipler's purpose in writing the original book and give credence to my reading of his unity cosmology. In the *The Physics of Immortality*, Tipler makes explicit many of the ideas that required a subtle reading in *The Anthropic Cosmological Principle*.

Tipler returns to the connection between cosmological ideas and political and ethical thought. This time instead of speaking mainly through the citation of other authors, Tipler explicitly interjects his own views on the subject. He examines the cosmology of eternal return, which suggests that the universe expands and collapses infinitely. As a result of this endless cycle, all events repeat themselves infinitely.

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<sup>678</sup> Tipler, *The Physics of Immortality*.

<sup>679</sup> Although from what I have read *The Physics of Immortality* was on the bestseller list in Germany for 15 weeks. Tressider, "Meaning of Life is, Er, God and Omega."

Tipler believes that the eternal return cosmology had an enormous effect on both politics and philosophy within the twentieth century.<sup>680</sup>

Tipler writes that the cosmology of eternal return, “is the basic foundation for the entire corpus of Nietzsche’s philosophy.”<sup>681</sup> He believes the same holds for Heidegger and his philosophical work. Tipler portrays both of these philosophers as critical ideological justifications for Nazism. He claims that the Nazis choose the swastika as a symbol based on its ancient meaning as a symbol for the cosmology of eternal return. Thus cosmology stands at the heart of Nazism. As Tipler writes, “the political consequences of Nietzsche’s Eternal Return philosophy have been catastrophic.”<sup>682</sup>

Given the boldness of the attribution of such an important effect to the eternal return, Tipler sloppily constructs his argument. He quotes a few passages from Nietzsche, Heidegger, and some leading Nazi officials talking about eternal return. While it is interesting that these figures talk about cosmology, Tipler fails to prove anything beyond a correlation. Much more significant, Tipler appears prepared to grant that if the Nazis had been correct about the structure of the universe, then Nazism would have been justified,

The Nazis who were aware of [the nonantisemitic] attitudes of Nietzsche emphasized that, in so rejecting racism, Nietzsche was rejecting the

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<sup>680</sup> Tipler, *The Physics of Immortality*, 74-89.

<sup>681</sup> Ibid., 79.

<sup>682</sup> Ibid., 82.

implications of his own Eternal Return idea. In this one and only aspect of philosophy the Nazis are correct; I thus reject the Eternal Return.<sup>683</sup>

This passage goes beyond Tipler's previous argument that the eternal return had enormous rhetorical power that influenced the Nazis. Here he suggests that Nazism logically makes sense in a universe of eternal return.<sup>684</sup>

This ups the ante from *The Anthropic Cosmological Principle*; in that book Tipler suggests that cosmology (heat death) could inspire the sense of life's pointlessness. Here he argues that cosmology (eternal return) played a key role in the rise of the Nazis. More importantly, if the eternal return cosmology were correct, then we lack a justification for criticizing the behavior of the Nazis because life is in fact a pointless arena for the exercise of power. This demonstrates the crucial importance for Tipler of having the correct cosmology to guide ethical behavior. It just so happens Tipler believes the cosmology that is good both for morality and scientific accuracy is the FAP.

In addition to his renewed focus on philosophy, Tipler does more to draw out the religious importance of the Anthropic Principle. *The Anthropic Cosmological Principle* kept the Omega point a vague construction, and relegated its religious connotation to a footnote. In *The Physics of Immortality*, Tipler begins to explore what he meant by the cryptic remarks about the Omega point in *The Anthropic*

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<sup>683</sup> Ibid., 83.

<sup>684</sup> Admittedly, this section of Tipler's book has some ambiguities. Tipler sometimes refers to Nietzsche's "Eternal Return philosophy," which could be read as distinct from the cosmology itself. After all, Tipler mentions the stoics shared the cosmology of eternal return, and while Tipler does not acknowledge it, their cosmology has little resemblance to Nazism. My reading of the text leads me to believe that Tipler uses these terms interchangeably such that the eternal return cosmology logically results in Nietzsche's philosophy of eternal return.

*Cosmological Principle.* He predicts the giant super computer will have the capacity to replicate everyone who has ever existed in the form of data. The personalities of every person who has ever lived, will be uploaded into a simulation, which Tipler labors to argue is equivalent to actually being reborn. The result,

The Omega Point Theory allows the key concepts of the Judeo-Christian-Islamic tradition now to be modern physics concepts; theology is nothing but physical cosmology based on the assumption that life as a whole is immortal. A consequence of this assumption is the resurrection of everyone who have ever lived to eternal life. Physics has now absorbed theology; the divorce between science and religion, between reason and emotion, is over.<sup>685</sup>

Tipler's futuristic technoheaven draws the connections between the Anthropic Principle and religion further than any of the religious scholars who cited his earlier book. Cosmology no longer represents a sign of God, but literally creates God.<sup>686</sup>

None of these claims conflict with the arguments Tipler presented in his earlier book. In fact, one can easily read Tipler's new arguments act as clarifications of his old positions. Although it is worth nothing that when Barrow heard of Tipler's new ideas about the Omega point he said they were best left as "science fiction."<sup>687</sup> Still,

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<sup>685</sup> Tipler, *The Physics of Immortality*, 338. The idea that physics must encompass theology if theology is to survive occurs throughout the book. Ibid., 3, 6-11, 337.

<sup>686</sup> Tipler foreshadows this conclusion again, in his response to an article by Martin Gardner when he writes, "It is fideism which is metaphysics and fantasy. Worse, fideism requires religion to be divorced forever from science. Gardner's real objection to our Omega Point theory is that it threatens to end the divorce." Frank J. Tipler, "Frank J. Tipler, reply by Martin Gardner," *The New York Review of Books* (1986).

<sup>687</sup> Tressider, "Meaning of Life is, Er, God and Omega."

Tipler and Barrow originally wrote the Omega point would be, “omnipotent, omnipresent, and omniscient!”<sup>688</sup> Why not imagine it capable of resurrecting all human life? They discussed the danger of heat death for philosophical thinking; why not imagine the wrong cosmology at the heart of Nazism? The foundations of these new arguments rested within *The Anthropic Cosmological Principle*; *The Physics of Immortality* simply brings them to the fore.<sup>689</sup>

The change from the subtle to the explicit alerted the critics of Tipler’s rhetorical strategy, resulting in a set of reviews very different from the reviews of *The Anthropic Cosmological Principle*. The three reviews on JSTOR all spoke negatively of the book, in contrast to the generally positive reviews of his previous book.<sup>690</sup> Brian Rotman wrote,

I suspect physicists will dismiss Tipler’s claims and project as those of an isolated raver and move to distance themselves from what they’ll see as sheer bad publicity for their science. Others, especially those concerned to question the rhetorical maneuvers and metaphysical presuppositions of contemporary science, will see it as a symptom of a near-suffocating hubris on the part, not just of Tipler, who is merely its vehicle, but of forces within physics itself.<sup>691</sup>

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<sup>688</sup> Barrow and Tipler, *The Anthropic Cosmological Principle*, 382.

<sup>689</sup> This highlights Booth’s point that science often shares many of the characteristics of religion, but refuses to acknowledge these overlaps. Wayne C. Booth, “Rhetoric, Science, Religion,” in *The Essential Wayne Booth*, ed. Walter Jost (Chicago: University of Chicago Press, 2006), 264-79.

<sup>690</sup> Brian Rotman, *SubStance* 24, no. 3 (1995); *ibid.*; Varadaraja V. Raman, “Hope from Physics,” *Science* 267, no. 5200 (1995); Albert B. Stewart, *The Antioch Review* 53, no. 3 (1995).

<sup>691</sup> Rotman: 152-53.



This quote indicates that Rotman understands that most of Tipler's argument represents an appeal to science as the ultimate authority. While the extremity of Tipler's claims may cause scientists to "dismiss" them as an aberration, Rotman says the really interesting take away is how Tipler's book just represents a common practice (appeal to scientific authority) taken beyond its rhetorical acceptance. Varadaraja V. Raman comes to a similar conclusion,

Readers of E. T. Bell's *Men of Mathematics* may remember the questionable anecdote in which Euler reportedly told an unbelieving Diderot in Catherine the Great's court, "Sir,  $(a + bn = Vn = x$ , hence God exists." The mathematically untutored Diderot (so the story goes) could not reply and promptly went back to France. This book may be regarded as a more serious, and considerably expanded, version of Euler's quip.<sup>692</sup>

Raman recognizes the practical effect of the scientific complexity of *Physics of Immortality* is that most readers have to take Tipler as his word. Most of the reviews of *The Anthropic Cosmological Principle* acknowledge its scientific difficulty, but they did not read this difficulty as a strategy of obfuscation. The more explicit nature of Tipler's conclusions in the *Physics of Immortality* appears to have ruptured the protective shield of "scientific objectivity." As a result, the reviewers clearly identify the rhetorical strategies deployed by Tipler. Effective deployment of the unity cosmology as an argument in modern times requires a much more subtle approach,

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<sup>692</sup> Raman, "Hope from Physics," 1042.

best exemplified by his earlier book.

## 5.11 CONCLUSION

In the *Anthropic Principle* Tipler and Barrow combine the belief that the universe appears tailor made for intelligent life, with the unity cosmology. They claim that the cosmos that emerges from these principles places humanity at center stage of universal events. While humanity may seem small in the face of the expanses of space, each human life contributes to the end goal of the Omega point. This magnificent *telos* of the universe gives meaning to lives of all humans who live, have lived, and will live. This meaning staves off the relativistic, nihilistic, and genocidal philosophies that Tipler believes a purposeless cosmos justifies.

While the idea of a futuristic super computer dominating the universe sounds like science fiction or a new age religion, Tipler and Barrow don the cloak of scientific discourse, which gives legitimacy to their ideas. They write in a style with enough accessibility that their philosophical implications are understandable to the average reader, but the scientific justifications for these principles have to be taken on faith. The omega point becomes a mathematical inevitability rather than a bold, largely unsubstantiated prediction.

The unity cosmology represents a central tenant of the rhetorical appeal of the *Anthropic Cosmological Principle*. Because of humanity's solitary place in the universe, we move to the center of the stage in the cosmic drama Tipler and Barrow outline. The Omega point does not represent an abstract end of the universe created

by alien beings; the Omega is built by *our* descendants retroactively granting purpose and value to our own lives.

Tipler and Barrow's book the *Anthropic Cosmological Principle* had an enormous impact. Presses publish tens of thousands of academic books every year. Only an elite few works capture the imagination of both the academic and wider audiences, spawning over a hundred articles and being referenced by heads of state. The success of the book only seems unusual when viewed as a random occurrence, however. It would be wrong to take the book's popularity as an improbability that demands explanation, much as the authors argue humanity's existence demands explanation. If one looks historically the unity cosmology has often struck a chord with audiences and elevated scientific works to best sellers.

Although in many ways vastly different, the core unity-perfection connection at the heart of Tipler and Barrow's work has changed little from Plato's time. Few arguments have remained present throughout such a span of time. More importantly, fewer arguments have continued to capture the public imagination in the way that Plato's unity argument has. Something about the connection of unity with perfection resonates powerfully in western societies as an answer to the ancient claim that "man is the measure of all things."

## **6.0 CONCLUSION: MAN AS THE MEASURE VS. THE UNITY OF THE WORLD**

Alfred North Whitehead once claimed that all western philosophy is a footnote to Plato. Dilip Gaonkar remarked that, if Whitehead is correct, any attempt to move beyond the status quo should return one to the ideas of Plato's nemeses: the sophists. One can easily construct a reading of history as a battle between these two schools of thoughts. On one side the Platonic ideas of teleology, Truth, and absolute morality; on the other, the sophistic beliefs of contingency, perspectivism, and moral relativism. My dissertation argues that in the foundational conflict between these sets of ideas, Plato introduced the unity cosmology as an argument for his philosophy. Just as the larger Platonic/sophistic debate has played out through history in modified forms, the unity cosmology has reemerged throughout time in different guises as an argument for Platonic values.

Plato writing in the fourth century BCE and Tipler and Barrow writing over 2,000 years later both deploy the unity argument. One must imagine that much of *The Anthropic Principle*, with its emphasis on quantum mechanics, exists beyond the comprehension of the smartest ancient Athenian (and many smart individuals today). At its core, however, both the *The Anthropic Principle* and the *Timaeus* make the same rhetorical appeal. For hundreds of years (1100-1500) the unity argument helped cement the European social structure. Whether he intended it or not, Plato stumbled upon an incredibly effective rhetorical connection that lives on in the public imagination to this day.

The case studies examined in this dissertation are far from exhaustive. Philosopher Georg Wilhelm Friedrich Hegel (1770-1831), Christian mystic Pierre Teilhard de Chardin (1881-1955), and biologist Simon Conway Morris (1951-Present) all connected unity to Platonic values and could easily merit their own chapters. As recently as 2000, University of Washington professors Peter Ward and Donald Brownlee wrote a book defending unity.<sup>693</sup> Future scholarship should delve into these and the many other examples of the unity rhetoric in order to find unifying strains as well as further differences.

Also notably absent from this dissertation is the examination of the rhetorical meaning of unity and plurality in other nonwestern cultures. If a similar unity argument does not occur in other cultures, it strengthens the importance of Plato's work as the key origin. If it does exist independently that would point to a more fundamental connection between singularity and value that crosses cultural lines. Even if Plato represents the genesis of the unity argument, an examination of how nonwestern cultures adopt the unity argument and adapt it to fit their own needs would likely prove a fascinating study.

Beyond unity and plurality this dissertation seeks to generate interest in the rhetorical study of cosmology more generally. Toulmin's *Cosmopolis* provided a case study in the way the Copernican cosmology functioned as an argument.<sup>694</sup> Few in the Communication discipline have followed up on Toulmin's work to examine the way other cosmological beliefs shape our values. The debates over whether the universe exists in a steady state or had a particular origin like the big bang could potentially serve as a fruitful area of rhetorical study, for example.

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<sup>693</sup> Peter Ward and David Brownlee, *Rare Earth: Why Complex Life is Uncommon in the Universe* (New York: Copernicus 2000).

<sup>694</sup> Toulmin, *Cosmopolis*.

## 6.1 THE RHETORICAL PROBLEM OF UNITY

The unity argument has proved rhetorically efficacious throughout history, but that does not necessitate it will be so in the future. Perhaps the greatest danger to its effectiveness lies in the scientific foundation, “we are alone.” A 2011 study, recently suggested over a billion habitable planets in our galaxy alone.<sup>695</sup> For those that tie their values to the absence of alien life, these sorts of discoveries represent a recalcitrance that must be overcome. As Kenneth Burke writes, “interpretations themselves must be altered as the universe displays various orders of recalcitrance to them.”<sup>696</sup> In the Medieval period, the failure of scholars truly to come to terms with the problems of the Aristotelian cosmology reflects the power of cognitive dissonance as a tool to overcome recalcitrance. Scholastics did not seize upon mounting inconsistencies in the cosmology in order to fashion a new one, in large part because of the Aristotelian cosmology’s connection to political, philosophical, and religious beliefs. Even the Aristotelian system, however, ultimately collapsed under the weight of the scientific evidence for heliocentrism.

The large unknowns about the question of alien life present a potential catastrophe for those that rely on the unity argument. I do not mean to suggest that alien life (intelligent or otherwise) exists for certain or even if it did that humanity will ever find definitive proof of its existence. There is a very real possibility that this could occur, however. By tying their beliefs closely with a particular cosmology, defenders of teleology, Truth, and absolute morality risk a scientific paradigm shift that could undermine support for their beliefs, just as the Copernican revolution helped undermine many of the social structures tied to the Aristotelian cosmology.

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<sup>695</sup> Michael G. Gowanlock, David R. Patton, and Sabine M. McConnell, “A Model of Habitability Within the Milky Way Galaxy,” *arXiv.org* <http://arxiv.org/abs/1107.1286>.

<sup>696</sup> Kenneth Burke, *Permanence and change: An Anatomy of Purpose*, 3 ed. (Berkeley: University of California Press, 1984), 256.

## 6.2 THE DANGERS OF UNITY

The unity argument points to a disturbing tendency in humanity, the need to assign worth relationally. The fact that the unity argument often functions as an enthymeme means that people already associate singularity with value. The existence of alien life does not fundamentally alter any of the characteristics of humanity, but people believe that the presence of extraterrestrials in some way devalues their own existence. This framing of human worth raises the specter of serious problems for the way that humans approach alienness.

The connection of unity with human value raises the stakes in identifying potential alien life. The National Research Council wrote an extensive report on the difficulties scientists could have in recognizing alien life.<sup>697</sup> The belief that the discovery of life will collapse teleology, Truth, and absolute morality will politicize these efforts in a way that further complicates them. Whewell, Tipler, and Barrow all allowed for the possibility of nonintelligent alien life in their versions of the unity argument. The line between intelligent and nonintelligent life remains hotly contested, even with animals like dolphins. If difficulties emerge categorizing a species with which humanity has shared the planet since its evolution, one can imagine the enormous difficulty in trying to determine whether a truly alien species should be considered “intelligent.” Similar debates occur over what would constitute sentient artificial intelligence. Anthropocentrism puts social barriers in front of the classification of other species as intelligent, because recognizing alien life as intelligent threatens to break down human “containment

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<sup>697</sup> Committee on the Limits of Organic Life in Planetary Systems, *The Limits of Organic Life in Planetary Systems*, ed. Series, trans. Translator, Number of, Series *The Limits of Organic Life in Planetary Systems* (Original Publication; repr.; reprint, Reprint)); *ibid.*

strategies, props supporting a dangerously brittle identity.”<sup>698</sup> One can easily read the unity argument as this kind of strategy and individuals cling to their identities, “brittle” or not.

Historically, basing one’s value in opposition to others has resulted in violence. Zimmerman makes connections between the unity cosmology and European disbelief at the prospect of new continents full of people.<sup>699</sup> The fractured cosmos that resulted from the contact helped justify European genocidal violence against the indigenous peoples.<sup>700</sup> Scholars claim that dehumanizing rhetoric has preceded every major genocide.<sup>701</sup> What form violence could take remains difficult to say, but the unity cosmology does currently influence philosophers of existential risk in ways that cause them to deprioritize potential human threats to alien life.<sup>702</sup> The unity cosmology does not necessitate either recalcitrance in identifying life or violence towards it, but these are potential concerns.

Decoupling the unity from human values opens up the potential for rhetorical openness to alien life. Michael Hyde refers to this openness as “acknowledgement” and positions it as an ethical responsibility.<sup>703</sup> Others have made the case that openness to the possibility of alien life, whether or not it exists, has important effects on our relations with other humans. Grinspoon writes, “certainly, efforts to communicate with intelligent extraterrestrials do not make much sense unless they are made on behalf of all humans. *Merely contemplating the possibility* of finding other life makes obvious our deep identification with all Earth’s inhabitants [bold and

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<sup>698</sup> John Durham Peters, *Speaking into the Air: A History of the Idea of Communication* (Chicago: University of Chicago Press, 1999), 230.

<sup>699</sup> Zimmerman, "Encountering Alien Otherness."

<sup>700</sup> Küpper, "The Traditional Cosmos and the New World," 368-75, 89; Zimmerman, "Encountering Alien Otherness," 157-60.

<sup>701</sup> Susan Opatow, "Moral exclusion and injustice: An introduction," *Journal of Social Issues* 46 (1990): 1-20; Leo Kuper, *Genocide: Its Political Use in the Twentieth Century* (New Haven: Yale, 1981), 93.

<sup>702</sup> Joseph Packer, "Alien Life in Search of Acknowledgment" (Masters, Wake Forest, 2007), 62-64.

<sup>703</sup> Hyde, *The Life-Giving Gift of Acknowledgment*.



italics mine]”.<sup>704</sup> Or as Primack and Abrams put it, “Dealing wisely with aliens or simply contacting them may be a distant goal, but understanding what it would mean can have an immediate and powerful effect. It makes clear what truly matters today: to *be* the kind of human beings we aspire to be in the long run, and to adopt this perspective *now*.”<sup>705</sup> The unity argument prevents these radical rhetorical reconfigurations by putting human value in opposition to the existence of alien life.

### 6.3 CONCLUSION

Despite its potential drawbacks, the unity argument has represented a rhetorical force throughout much of human history. Few signs exist that its use by rhetoricians to defend teleology, Truth, and absolute morality will abate anytime soon. The universe as a foundation for argument has enormous appeal. The connection between singularity and Platonic values can serve as an unstated premise, which allows individuals to structure the unity argument as an enthymeme. The cosmological nature of the unity vs. plurality debate speaks to the structure and purpose of the universe. Unity, thus, undergirds a broader understanding of human ethos, understood as our dwelling place. The scientific nature of the defense of unity gains it the credibility society affords to science. All of these rhetorical strengths, combined with the unity argument’s long track record, indicate that it will remain an argumentative force well into the future.

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<sup>704</sup> Grinspoon, *Lonely Planets*.

<sup>705</sup> Abrams, *The View from the Center of the Universe*, 235.

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